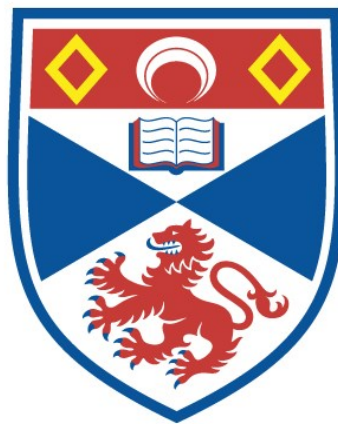


**FORMAL CAUSATION AND MENTAL REPRESENTATION : A
THOMISTIC PROPOSAL.**

Gabriele De Anna

**A Thesis Submitted for the Degree of PhD
at the
University of St Andrews**



2003

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University of St. Andrews

Ph.D. Thesis

**Submitted on
14th January 2003**

**Formal Causation and Mental Representation.
A Thomistic Proposal**

**Candidate:
Gabriele De Anna**



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Declarations of Candidate

I, Gabriele De Anna, hereby certify that this thesis, which is approximately 100'000 words in length, has been written by me, that it is the record of my work carried out by me and that it has not been submitted in any previous application for a higher degree.

St. Andrews, 14.01.2003

Signature of Candidate

I was admitted as a research student in September 1996 and as a candidate for the degree of Philosophy Doctor in September 1997; the higher study for which this is a record was carried out in the University of St. Andrews between 1996 and 2000.

St. Andrews, 14.01.2003

Signature of Candidate

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Declaration of Supervisor

I hereby certify that the candidate has fulfilled the conditions of the Resolution and Regulations appropriate for the degree of Philosophy Doctor in the University of St. Andrews and that the candidate is qualified to submit the thesis in application for that degree.

St. Andrews, 17.1.03...

Signature of Supervisor

(Professor John Haldane)

Abstract

In the past years, the relevance of Thomas Aquinas's theory of cognition for contemporary debates on epistemology has been widely discussed. That theory claims that mind and world are formally identical and that this relationship overcomes various problems associated with scepticism concerning mental representation. The proposal, however, is grounded on the idea that the world can act on the mind through a relation of formal causation. This thesis attempts to develop a Thomistic theory of formal causation which may be suitable for a realist account of mental representation and which may meet the requirements prompted by current discussions.

The suggested view is grounded on Aquinas's metaphysics, according to which the world is constituted of substances. The claim that change is possible since substances are hylomorphically constituted (viz., metaphysically composed of form and matter) is defended. Aquinas's claim that some substances have forms which may act independently of matter is also supported. The paradigmatic examples are human souls, i.e. the forms of human beings, whose higher cognitive capacity, i.e. thinking, can be in principle carried on without the need of any material organ. A Thomistic theory of causation is subsequently proposed. It is argued that hylomorphism explains the distinction among four species of causes (material, formal, final and efficient). Aquinas's attempt to explain causal relations conditionally is developed along the lines suggested by John Mackie's INUS conditional analysis. Jaegwon Kim's implementation of Mackie's proposal through an object-based metaphysics of events is then adapted to the hylomorphical account of substances. On these grounds, a theory of formal causation can be proposed and applied to Aquinas's theory of mental representation. The ensuing proposal is offered not in the spirit of historical exegesis but as a substantive philosophical account and it is Thomistic only in the broad sense that it is built on Aquinas's metaphysics and is consistent with his claims on causation.

Acknowledgements

I can hardly express the extent of my gratitude for Professor John Haldane, who supervised this work. His comments and his advises were precious, and his direction, by merging tactful, but firm guidance with a genuine enthusiasm for research, resulted always extremely motivating, and gave me strength and confidence in the peruse of my project. Furthermore, when the events of life led me to protract my research and to continue my work abroad, his patience and his helpfulness went well beyond what can be expected form a supervisor. All this purports that the weaknesses and the flaws in the result of my efforts are entirely mine.

I am extremely grateful to the School of Philosophical and Anthropological Studies for a three years top-up award (1996-1999), the Regional Council of Friuli-Venezia Giulia (Italy) for a scholarship (1996), the Department of Philosophy at the University of Padua (Italy) for a doctoral scholarship (1996-1999), various bursaries, and a research grant (2000-2002).

I benefited of comments from and discussions with various philosophers, in particular Prof. Enrico Berti (Padua), Prof. Giovanni Boniolo (Padua), Prof. John Broome (Oxford), Prof. Danilo Castellano (Udine), Prof. Pierdaniele Giaretta (Padua), Dr. Fraser MacBride (St. Andrews), and Dr. Stephen Read (St. Andrews). During my years of study, several friends nourished me intellectually and affectively, in ways that they might not even imagine. I would like to mention Mark Brewer, Max Carrara, Annalisa Coliva, Thomas D'Andrea, Maximilian von Habsburg, Paul Markwick, Raffaele Rodogno, and Ramon Tello, amongst many others.

Finally, my family. I always had their support, their help, their sympathy and their affection. And especially, I knew they were there, in any event.

Introduction

In the last few decades, analytical philosophers have increasingly become interested in a broad variety of traditional philosophical issues and have relaxed if not abandoned their original confinement to the analysis of logic and language. The refined and articulated arguments of analytical philosophers have consequently been focused also on ethics, political philosophy, the philosophy of mind, metaphysics and so on. This broadening of interests has induced a greater attention for history. Great philosophers of the past have come to be seen as the supporters of philosophical views which may still have some interest in contemporary debates; and the history of philosophy has began to appear as a storehouse of philosophical argumentation, which sometimes took entire centuries to be fully developed. The interest of these philosophical debates lies in the fact that they constitute samples of philosophical possibilities which open up when some of the assumptions normally shared in contemporary discussions are given up, or at least suspended.

Thomas Aquinas, the 13th Century master at the University of Paris, is one of the great figures of the past who has received most attention in the context of this novel interest for the history of philosophy. Following the seminal work of Peter Geach, who was the first analytical philosopher to focus on his thought, most areas of philosophy covered by Aquinas have been considered in the light of his work by contemporary thinkers writing in the English-speaking tradition. Just to recall the main examples, his philosophy of law and his philosophy of politics have been discussed by John Finnis (1998), his ethics by Alasdair MacIntyre, and his philosophy of mind by Anthony Kenny (1993). Several essays by analytical

philosophers have also been published on his metaphysics, his theory of cognition and his philosophy of language. Such a wide interest has also given rise to the term 'Analytical Thomism', which, since it was first used by John Haldane in the early 1990s and later as the title of an issue of *The Monist* edited by him in 1997, came to refer both to a new analytically oriented historiographical approach to Aquinas's texts and to a new trend in analytical philosophy.

The distinctive character of Analytical Thomism was summarised by Haldane in the prefatory note in the above mentioned issue of *The Monist*:

Analytical Thomism is not concerned to appropriate St. Thomas for the advancement of any particular set of doctrines. Equally, it is not a movement of pious exegesis. Instead it seeks to deploy the methods and ideas of twentieth-century philosophy – of the sort dominant within the English-speaking world – in connection with the broad framework of ideas introduced and developed by Aquinas. *Form, matter, existence, individuation, concepts, mental utterances, good, and evil* all get some treatment by [analytical Thomists]. (Haldane, 1997a, 486).

These remarks may help us to understand both the historiographical and philosophical aspects of Analytical Thomism. Concerning historiography, the deployment of "the methods and ideas" of analytical philosophy may help to understand the coherence and the problems underlying Aquinas's views, and this, in turn, may help a charitable interpretation and thus a better understanding of his philosophy. Concerning philosophy, some of Aquinas's arguments may have a theoretical interest even within contemporary debates, and, consequently, one may try to elaborate and articulate them with the "methods and ideas" of contemporary philosophy and to support them in current discussions. In this sense, Analytical Thomism is not an attempt to offer a "pious exegesis", viz. to support the doctrines of Aquinas to the point of giving up philosophical credibility.

The philosophical concern of Analytical Thomism represents a very welcome novelty. As it is well known, the philosophy of Thomas Aquinas was for a long time one of the main philosophical trends of Catholic thought, and, since 1879, when pope Leo XIII wrote the encyclical letter *Aeterni Patris*, it even came close to being the official philosophy of the Catholic Church for almost a century. Although this promoted the study of his works and the production of critical editions of his texts, it also induced the idea that his thought has an exclusively Catholic concern. Furthermore, the fundamentally apologetic, "pious" character of traditional Thomistic studies confined him almost wholly within restricted Catholic circles. By contrast, the approach of Analytical Thomism opens his arguments to rational scrutiny and broad philosophical discussion. This may help to rediscover the value of his work, which, at least in many writings, he certainly meant to be genuinely philosophically engaged.

The present thesis is an attempt to contribute to Analytical Thomism, in both respects, the historiographical and the philosophical. The first two chapters are an example of Analytical Thomistic historiography, since they try to reconstruct and to show the plausibility of Aquinas's hylomorphism (i.e., the view that material reality is made of substances composed of form and matter) and his conception of the human mind. Chapters three to five, instead, are mainly philosophical, since they attempt to offer an account of formal causation and mental representation which is grounded on Aquinas's metaphysics, but is also engaged with contemporary debates, in a way which requires the development of views which were not spelled out by Aquinas himself. Thus, whereas the first two chapters are *on Aquinas*, the last three are not on Aquinas, but are *Thomistic*, in the sense that they offer arguments which are grounded on Aquinas's positions, but were not explicitly proposed by him.

The issue of formal causation and mental representation fits into one of the central areas of philosophy, i.e. epistemology, which is also one of the most lively topics discussed by Analytical Thomists. The contribution of Analytical Thomism to contemporary epistemology was first advanced by Haldane (1988, 1992b, and 1993a) in connection with Hilary Putnam's discontent with metaphysical realism. As it is well known, Putnam (1981) argued that the versions of realism previously supported by himself faced some insurmountable difficulties, since there is no naturalistically acceptable account of how the mind hooks onto the world. Even causal theories of reference, which are the most widespread and promising solutions, cannot but fail: his permutation argument showed that there is no way to pick a unique or even dominant causal link which may secure the referent of each linguistic term. Haldane's contention was that the problems which arose from the permutation argument can be avoided if one accepts a Thomistic conception of thought, according to which thought and reality are formally identical, i.e. there is some ontological isomorphism between acts of thought and thought objects. The notion of formal identity can secure reference, though, only at the cost of giving up physicalism: intentionality must be taken as a primitive notion, irreducible to physical states of the brain, and involving a relation of formal causation between world and mind. Thomistic mental representation presupposes Aquinas's metaphysics.

Putnam (1993) agreed that Haldane's thesis has the suggested epistemological advantages, but he also pointed out two problems. First, he asked for an articulated explanation of the ideas that world and mind are formally identical and that the mind takes over the form of the world (Putnam 1993, 71). Second, he complained that one may think about a certain object even if one lacks the relevant concept, i.e., in Thomistic terms, has not taken over its form (Putnam 1993, 72-4). Subsequent

articles by Haldane addressed these issues (1993b, 1996, 1998, *et al.*), and Putnam himself came finally to accept the merits of a broadly Aristotelian metaphysics in his 1994 Dewey Lectures (Putnam 1994), now part of his book *The Threefold Cord* (Putnam 1999). For example, he suggested that a purely causal relation between the world and the mind cannot account for cognitive content, and consequently some version of Aristotelian direct realism needs to be developed:

It is the fashion to hypothesise the existence of "representations" in the cerebral computer [...] and to think that those "representations" are linked to objects in the organism's environment only causally, and not cognitively. [...] This picture [...] is disastrous for just about every part of metaphysics and epistemology. [...] The key assumption responsible for the disaster is the idea that there has to be an interface between our cognitive powers and the external world.¹

A quite lively debate on Thomistic epistemology followed these exchanges. Discussions focused both on the details of Haldane's proposal (Boulter 1997 and 1998 and De Anna 2000a) and on other epistemological advantages of Aquinas's realism. Jonathan Jacobs and John Zeis (1997), for example, argued that Thomistic epistemology and metaphysics can meet the challenge of Quine's thesis on ontological relativity – as well as other versions of scepticism about semantic meaning such as those induced by Kripke's and Goodman's paradoxes. According to Jacobs and Zeis, the indeterminacy of reference is the result of the idea that sense experience underdetermines concept formation, but this, in turn, is the result of the presumption that one must be able to *justify* one's use of concepts through his sense experiences. If one gives up this internalist assumption and accounts for concept formation through the idea that there is a relation of formal causation between experiences and concepts, scepticism on meaning can be overcome.

¹ Putnam 1994, 452-3.

In the past, I reconstructed and critically discussed these debates in a doctoral thesis presented to the University of Padua, Italy, in December 1999, for the degree of *dottore di ricerca*. A revised version of that thesis was subsequently published as a book (De Anna 2001). Since the topic of the present work emerged from problems which I pointed out there, I believe it is worthy to recapitulate my previous results. The Padua thesis was divided in three parts, each containing two chapters. The first part concerned the epistemological background of the Thomistic proposal, especially in connection with Putnam's antirealism. The second part was a critical reconstruction of the epistemological and metaphysical realism suggested by Analytical Thomists. In the third part I addressed the issue of formal identity in sensation, both in relation to an exegetical problem and to a philosophical one. (For a complete, brief summary of that thesis see the Appendix).

The first part attempted to account for the reasons which led Putnam to accept antirealism. The first chapter analysed the brands of metaphysical realism consistent with analytical naturalistic orthodoxy and the second the reasons for which Putnam abandoned realism. It was not a mere reconstruction, but the considerations concerning realism and Putnam's objections to it aimed at supporting the following thesis, sketched by Haldane (1993a). The conjunction of metaphysical realism and naturalism implies semantic realism. Putnam had effectively shown that semantic realism is unacceptable, and, consequently, also the conjunction of metaphysical realism and naturalism is unacceptable. Putnam tried to solve the problem without renouncing naturalistic orthodoxy and so gave up metaphysical realism. This, however, led him towards relativistic conclusions which he himself found unacceptable. The trouble with relativism is that it fails to explain our experiential

constraints, since it does not allow us to think about reality in terms of mind independent structures.

In the second part, I expounded and defended proposals arising out of Analytical Thomism. Chapter three deals with reasons to give up naturalism, and, thus, with the possibility of a conception of intentionality such as Aquinas's. This involves the formal identity between mind and world. Chapter four dealt with the epistemological advantages of this form of intentionalism: one may give up the conjunction of metaphysical realism and naturalism by maintaining the former and giving up the latter. The resulting brand of semantic realism is not the extreme version described in chapter one and is not open to the problems of referential permutation highlighted by Putnam. I also defended against an objection due to Stephen Boulter the idea that Thomistic semantic realism differs from the problematic versions associated with naturalism. (This defence is also published in English: cf. De Anna 2000a).

The third part of the Padua thesis dealt with some problems of Aquinas's theory of cognition, which is the ground of the proposal under discussion in this thesis. As mentioned above, the work of Analytical Thomists must involve both the accurate reconstruction of Aquinas's thought and the advancement of some of his theses in contemporary debates. The third part attempted to be a contribution in both respects. Chapter five was mainly historical and focused on the first stages of the cognitive process described by Aquinas, i.e. the reception of sensible *per se* forms by the senses. Chapter six focused on the Thomistic idea that colours, odours, etc., are real properties of things. I did not mention Aquinas at all in this context, but I defended this idea in connection with the *simple view of colours*, recently suggested by John Campbell.

The conclusion of my work was that the Thomistic proposal may be a respectable contender in contemporary debates, but it had one main urgent problem to solve: it needed to offer an articulated and satisfying account of formal causation and its metaphysical presuppositions. Indeed, the hopes of Thomistic epistemology rest on Aquinas's account of cognition which claims that, and explains how the mind becomes formally identical to the world. The cognitive process, in Aquinas's reconstruction, involves the recurrent use of the notion of formal causation, which is heavily entangled with Aquinas's hylomorphic metaphysics. Consequently, it appeared to me that three tasks were in urgent need of attention. First, to clarify the metaphysical presuppositions of formal causation; second, to offer a satisfying analysis of causation in general and formal causation in particular; and third, to verify whether and how the suggested analysis of causation – and formal causation in particular – could serve the purposes of the Thomistic account of cognition, and, ultimately, of mental representation.

The goal of the present work is to address these tasks. Chapters one and two examine the metaphysical outlook which grounds Aquinas's theory of cognition. Chapters three and four sketch a Thomistic theory of causation, consistent with the metaphysical claims previously discussed. Chapter five shows that and how the proposed account of causation fits in a Thomistic theory of cognition. As mentioned above, the first two chapters are historical and closer to Aquinas's actual claims, the last three are Thomistic in the broader sense that they suggest a theory of formal causation and mental representation which goes beyond Aquinas's thought, but which are consistent with it. It may be useful to give a closer account of what I will attempt to do in each chapter.

The general outlines of Aquinas's metaphysics are considered in chapter one. Both Aquinas's theory of causation and his views on cognition are grounded on the premise that reality is composed of hylomorphically constituted substances. The idea, of course, is older than Aquinas and, in the form taken over by him, it dates as far back as Aristotle. Aristotle's claims about the priority of substances, however, are quite tricky, and ancient and contemporary commentators have always struggled to formulate his arguments for substance priority in a way which renders them sound. I will offer an exegesis of Aquinas's commentary on Aristotle's *Metaphysics* which makes plausible the claim on substance priority. Since the general purpose is that of supporting some of Aquinas's views on formal causation in contemporary debates, I will also need to deal with the hopes, in current discussions, of a metaphysics based on hylomorphically constituted substances. This will lead me to deal with some objections to substance based metaphysics recently advanced by Peter Simons, and with some worries about hylomorphism raised by E. J. Lowe. In the rest of the chapter I will discuss Aquinas's views on the distinction between substantial and accidental forms, and on the notion of matter as a principle of individuation.

Chapter two completes the analysis of the metaphysical presuppositions of Aquinas's theory of mental representation with a focus on the human intellect. Since Aquinas takes cognition to be a causal relation between mind and world, and the grasping of universals to involve an immaterial faculty of the mind (i.e., the intellect), I will discuss Aquinas's reasons to claim that in reality there are substances which have immaterial cognitive faculties. This will require an overview of the overall project carried out by Aristotle in his *Physics* and continued in his *De anima*. The *Physics*, indeed, analyses material reality and the *De anima* completes that analysis by studying living sensible material objects. Cognition emerges as a bundle

of abilities which characterises some forms of life. Humans, furthermore, have special cognitive abilities (conceptual thought, or, in Thomistic terms, 'intellection') in addition to those shared by other animals. These special abilities, though, can only be exercised by something immaterial. The soundness of Aquinas's reasoning concerning the immateriality of the intellect has recently been questioned by Robert Pasnau. I will defend Aquinas's arguments against this challenge. I believe that the defence will ultimately be successful, and this is an important point besides the mere exegetical interest: much of Aquinas's account of thought, as it will be clear in chapter five, depends on his assumption that the intellect is immaterial and that its contents (intelligible species) are universal since they are not individuated by matter.

The problems of causation will be addressed in chapter three, which will focus on causal relations. Aquinas does not say much about causal relations, besides repeating the Aristotelian fourfold distinction between efficient, material, formal, and final causes; and articulating it with various claims about the interrelations between different kinds of causes in causal chains and causal explanatory patterns. But he does make the very interesting claim that causal relations can be analysed as conditional relations ("the effect would not have occurred if the cause had not occurred"). This will allow me to develop a Thomistic theory of causation which will go beyond Aquinas. Indeed, I will suggest that a conditional analysis can be developed either in counterfactual terms (along the line suggested by Lewis), or along the lines of Mackie's *INUS* conditional proposal (according to which a cause is an Insufficient Necessary conjunct of a Unnecessary Sufficient condition of the effect, viz. *INUS* condition). Since Aquinas's metaphysics is incompatible with the ontology of possible worlds presupposed by counterfactual analyses, I will try to develop his views in the terms of an *INUS* conditional analysis of causation. The

challenge will be that of showing that the fourfold distinction of kinds of causes, and the other distinctions suggested by Aquinas, are compatible with an *INUS* conditional analysis of causal relations.

Chapter four also concerns causation, but it will focus on causal *relata*. Developing Aquinas's theory along the lines suggested by Mackie may be problematic, since Aquinas takes substances and their hylomorphic components to be causal *relata*, whereas according to Mackie only events may be causes and effects. Mackie's theory, however, was criticised precisely for its unsatisfactory treatment of the individuation of events. An implementation of his proposal suggested by Kim overcame this difficulty, through a substance-based theory of the individuation of events. This may reconcile Aquinas's views with Mackie's: I will claim that when we take events to be *INUS* conditionally related as causes and effect, and when events are identified by the substances involved in them, it makes sense to claim that substances and their hylomorphic components are *INUS* conditionally related, and, thus, can be causes and effects. The individuation of events suggested by Kim will allow me also to offer an explanation of why we need the fourfold distinction among kinds of causes put forward by Aristotle and accepted by Aquinas. The hylomorphic composition of substances discussed in chapter one will be the ground of the suggested theory of causation, which will prove able to accommodate also the possibility of immaterial substances introduced in chapter two. The chapter will end with some considerations on formal causation and formal identity.

The fifth and final chapter will be an attempt to apply the theory of causation, especially formal causation, developed in chapters three and four, to Aquinas's theory of cognition, which is based on the metaphysical outlook considered in chapters one and two. I will offer a brief summary of the cognitive process described

by Aquinas and will try to highlight the key-points at which formal causation plays a crucial role. Subsequently, I will show how each of those key-points can be accounted for in the terms of the theory of causation proposed in the previous chapters. Finally, I will claim that the proposed view offers a satisfying explanation of the notion of formal identity between mind and world, and can explain some features of concept formation which may seem problematic within a Thomistic outlook.

A final practical remark. All quotations make reference to authors and dates of publication, as recorded in bibliography. The only exceptions concern Aristotle and Aquinas, whose works are referred to without mentioning the authors, through the titles which they are given in the bibliography.

Chapter One

Aquinas on the Priority and Hylomorphic Composition of Substances

1.1 Aquinas and Aristotle's Metaphysics

Aquinas developed his metaphysical views in his commentaries on Aristotle's work, and this is why it is often believed that he was an Aristotelian. However, although the influence of Aristotle on him was certainly very strong, it is now commonly accepted that he was deeply influenced by Platonism as well. In discussing his metaphysics, I will not try to settle the question of who influenced each of his theses. I am only interested in his views. Thus, although I will mention Aristotle quite often and ignore Plato, I do not mean to undervalue the influence of Plato on Aquinas. The fact, however, is that Aquinas's (main) treatments of the problems I am interested in are in his commentaries on Aristotle.

In the next section, I will mention two of the problems with Aristotle's theory of substances: the problem of priority, and the problem of the very nature of substances. This is necessary since Aquinas developed his own views by building on those of Aristotle. In section three, I will reconstruct Aquinas's thesis of the priority of substances. I will claim that an argument for the priority of substances that he offered is rather weak, but that he has the resources to make it stronger. In section four, I will defend his views on substance priority from a recent criticism due to Peter Simons. In section five, I will mention Aquinas's reasons for maintaining

hylomorphism (the view according to which substances are composed of form and matter) and I will discuss Aquinas's conception of substantial form. I will address his surprising thesis according to which natural things are substances, but artefacts are not. In the sixth and final section, I will discuss some problems concerning Aquinas's idea of matter, in reference to recent criticisms due to E. J. Lowe and to Christopher Hughes.

The purpose of the present chapter, as well as that of the following one, is to reconstruct those aspects of Aquinas's metaphysical outlook, which constitute the background of his theory of formal causation, which is recalled in the recent debates on mental representation considered in this work. Thus, the intent is not mainly that of providing a historically accurate exegesis, but that of considering the strength and the plausibility of those views. In the light of this consideration, Simon's, Lowe's and Hughes's criticisms of Aquinas's theses on substances presented in this chapter need to be addressed, if Aquinas's notion of formal causation is to be proposed as a contender in contemporary debates.

1.2 Some Problems of Aristotle's theory of Substance

Aquinas followed Aristotle in taking reality to be constituted ultimately of substances. This view is actually a conjunction of two claims, both of which need support: thus one may expect both an explanation of what substances are, and a justification of the claim that they are the ultimate constituents of reality. There are two main places where Aristotle attempts to do this, first in the *Categories*, and then in *Metaphysics Z*. In the *Categories*, Aristotle writes:

A *substance* [...] is that which is neither said of a subject nor in a subject, e.g. the individual man or the individual horse. The species in which the things primarily called substances are, are called *secondary substances*, as also the genera of these [e.g. man and animal]. [...] If something is said of a subject both its name and its definition are necessarily predicated of the subject. For example man is said of a subject, the individual man, and the name is of course predicated [...], and also the definition of man will be predicated of the individual man. [...] But as for things which are in a subject, in most cases, neither the name, nor the definition is predicated of the subject. In some cases there is nothing to prevent the name from being predicated of the subject, but it is impossible for the definition to be predicated. For example, white, which is in a subject (the body), is predicated of the subject; for a body is called white. But the definition of white will never be predicated of the body.¹

From the example we are offered (i.e. an individual man), we can gather that, according to Aristotle, a substance in a strict sense (or a *primary substance*, as sometimes Aristotle says) is paradigmatically a concrete individual. He differentiates substances in this strict sense, from *secondary substances*, i.e. universals (such as *man* or *animal*), which can be "said of" and whose names can be "predicated of" concrete individuals.² Universals of this sort are such that their definitions can also be predicated of the individuals of which their names can be predicated. If an individual *m* can be truly said to be a man, and 'rational animal' is the definition of 'man', then *m* can be truly said to be a rational animal. Other things, i.e. properties, relations and states, have names which might or might not be predicated of concrete individuals, but whose definitions certainly cannot be predicated of those same individuals: such things *are* (or *inhere*) *in* those individuals.³ Let us assume that the

¹ *Categories*, 2a 11-33

² 'Being said of' and 'being predicated of' are not equivalent: "The fact that A is said of B is not the fact that 'A' is predicable of B. The fact that A is said of B is not even the fact that both 'A' and the definition of A are predicable of B. This is fact about language that follows from that fact about the relation between things" (Ackrill 1963, 82).

³ Aristotle listed nine categories (i.e., kinds of predicates), other than substances. These are either properties (e.g., 'to be white'), relations (e.g., 'to be taller than') or states (e.g., 'to be running'). According to Aristotle, all these things are in substances, contrary to what we would say: in fact, we would claim that properties are in individuals, but that individuals are in relations or states. His reasons for claiming that, besides, probably, some characteristic of Greek, has to do with the fact that both relations and states individuals are in, depend on features intrinsic to those individuals.

individual man *m* is white, and that white is a colour by definition: *m* can be truly said to be white, but not to be a colour. So white *is in m*.

In this way, Aristotle seems to give an account of what substances are. This account is based on some properties of predication which differentiate terms referring to concrete individuals from universals and from terms for properties, relations, and states. Thus it provides a criterion for substantiality which may be called the '*predicamental criterion*' (hereafter *PC*). Then, he can go on to say in what sense they are the ultimate constituents of reality: they are metaphysically prior in respect to all other things.

All the other things are either said of the primary substances as subjects or in them as subjects. So if the primary substances did not exist it would be impossible for any of the other things to exist.⁴

Metaphysical priority therefore is to be taken in the sense that what is metaphysically prior needs necessarily to exist if what is posterior is also to exist. According to this criterion, primary substances would be prior both to the secondary substances which are said of them, and to the properties, relations, and states which are in them.

This treatment of substances, though, is problematic for at least three reasons. Aristotle himself, in later works, did not mention further the distinction between primary and secondary substances, although he probably maintained it,⁵ and in the *Metaphysics* he tried to improve his account of substantiality through a different, although possibly partially compatible, theory, which will be considered below.

First, it is not clear what the metaphysical relation between primary and secondary substances is, although Aristotle's distinctions may be satisfying as far as grammar, or even logic, is concerned. Even assuming that it is true that a secondary substance exists only if some particular primary substance exists, do they have the

⁴ *Categories*, 2b 4-6.

same kind of existence? Primary substances, and even properties, can be objects of sensible experience, but this is not the case of secondary substances: do they exist in a realm separate from the material world? In any case, how can an *individual* be also *man* and *animal*? An answer to these questions must have been particularly pressing for Aristotle, given the fact that his main aim in stating *PC* was to prepare the terrain to claim the metaphysical priority of concrete individuals over universals, in order to give an account of universals alternative to that of Plato.

Second, concerning things which are in a subject, Aristotle fails to distinguish between individual properties, relations and states and the corresponding universals. His view entails that when an individual man *m* can be truly said to be white, it falls under the *universal concept white*; but what is in *m* is a particular instance of white, not the universal concept which can be predicated of *m*. However, he failed to note this distinction.

Third, the criterion for metaphysical priority is problematic. It is only *possibly* true what Aristotle says, i.e. that no secondary substance (e.g., the property of being an animal) could exist if no primary substance (e.g., some individual animal which instantiates the property of being an animal) exists, since one could maintain that there are uninstantiated universals. Unless Aristotle has some further argument to reject this Platonic possibility, it would be question-begging to use the claim that substances are prior to support a view alternative to Plato. At the same time, furthermore, the reverse of Aristotle's criterion seems to be true: no primary substance (e.g. an individual thing, like a stone) could exist if it were not a thing of a certain kind, i.e. if some particular secondary substances (e.g., the property of being a stone) did not exist. This means, though, that, according to this criterion secondary substances are metaphysically prior to primary substances.

⁵ Cf. Ackrill 1963, 81.

In a similar manner, properties, relations and states could turn out to be prior to primary substances. In this case there are two possibilities. If we take properties as universals, we could claim that, since a stone must be some colour, if no colour property existed, no stone could have existed. Similarly, if we take properties as individuals, we could claim that a particular instance of a colour could exist even if the subject in which it inheres goes out of existence. For example, the whiteness of Socrates went on existing after Socrates died, and the whiteness of a statue may keep existing even if we break the statue in pieces.

Someone could suggest that there is also a fourth problem. From the examples offered by Aristotle, it seems clear that he takes substances to be concrete individuals, but *PC* could be mistakenly taken to apply to universals and properties just as well: animality, for example, can be said of humanity, and rationality is in it, thus one could believe that, according to *PC*, humanity should be as good a candidate for substantiality as any individual man. The same is true, the objector could say, of properties: things can be predicated of them both as being said of and as being in them, and, thus, they should also be substances.⁶ Although this objection is based on a misunderstanding of *PC*, it may be useful to discuss it, since this may help to explain the criterion. The misunderstanding is due to the fact that *PC* does not claim that anything which has things in it or said of it is a substance, but that anything which cannot be in or said of anything else is a substance. Although universals and properties have things in and said of them, they also are in or said of something else. Naturally this response rests on the assumption, shared by Aristotle,⁷ that the

⁶ Simons (1998, 237), for example, suggests that any things that could be ultimate subjects of predication would turn out to be substances: thus particulars as individual properties, relations and states would also be substances, and this jeopardises the attempt to ground the distinction between substances and things which are in substances of the predicamental criterion.

⁷ "Aristotle recognises that [...] 'generosity' and 'generous' do not serve to introduce two different things (we should say 'concepts'), but introduce the same thing in two different ways" (Ackrill 1963, 82).

semantic values of the concept *white* and of the noun 'white' are identical, i.e. that the colour white, and the property of being white are the same thing.

Maybe it is in order to overcome (at least some of) the three problems above that Aristotle treated the theory of substance again in the *Metaphysics*. In book Z, in fact, he wrote:

On the one hand [what is] signifies what a thing is and a this, and on the other of what quality or quantity or any of the other things thus predicated. But while what is is spoken of in these various ways, it is clear that the primary thing that is is what a thing is, which signifies [its?] substance. [...] what primarily is - not is something but is without qualification - will be substance. Now we speak of what is primary in many ways, but substance is primary in every way - in definition, in knowledge, and in time. For none of the other predicates is separable but this alone; and in definition too it is primary, since in the definition of everything there must occur the definition of a substance; and we think we know a thing most fully when we know what the man is, or the fire, rather than when we know its quality or quantity or place.⁸

We can note that here Aristotle seems to have a more articulated theory of the priority of substances than in the *Categories*: he now lists three criteria according to which substances would be prior, instead of one. Concerning the nature of substances, he mentions something which may look like a new criterion for substantiality, possibly alternative to *PC*: a substance is a being (what is) which is not "something", but is "without qualification." Before discussing this criterion, let us consider that, as in the *Categories*, Aristotle maintains the distinction between items which are substances and items which are in other categories (quality, quantity, etc.). When speaking of substances, though, he does not distinguish between primary and secondary ones, and, actually, he seems to treat both together ('what a thing is', in fact, seems to refer to a *secondary* substance, and 'a this' [such and such] to a *primary* one).

⁸ *Metaphysics*, Z, 1, 1028 a 12 - 1028 b 2.

According to D. Bostock, the issue of whether Aristotle refers to primary or secondary substances is "the main problem of the interpretation of *Z, 1*" (Bostock 1994, 54). Aquinas (*ME*, VII, lectures 1 and 2), on the other hand, seems to believe that Aristotle is purposely vague at this point, since his main concern would only be to support the idea that substances are prior; only in *Z, 2*, would Aristotle start dealing with the problem of deciding *what* a substance is, and at that point he considers four options: a) "quiddity, essential structure, or nature", b) a universal, c) first genus, i.e. unity and being, d) an individual. According to Aquinas, though, Aristotle's vagueness in *Z, 1*, does not depend on an indecision between primary (d) and secondary (b and/or c) substances. He takes 'what is' to refer to quiddity, or essence; a sense of 'substance' not yet introduced in *Z, 1*, and ignored in the *Categories*. This would be a novel sense of the term, introduced in the *Metaphysics*, and fundamental in order to understand the difference and the relations between the theory of the *Categories*, and that of the *Metaphysics*:

The division of substance given here [*Metaphysics*] is almost the same as that given in the *Categories*, for by subject here is understood first substance [d)]. And what he called the genus and the universal [b) and c)], which seem to pertain to genus and species, are contained under second substances. However, the essence, which is given here, is omitted in that work, because it belongs in the predicamental order only as a principle; for it is neither a genus nor a species nor an individual thing, but as the formal principle of all these things.⁹

The *Categories* is a study of predication, and as far as kinds of predications are concerned, only genera, species, and individuals are relevant. This is precisely the result that Aristotle obtained when he formulated *PC*. *Metaphysics*, though, deals with reality and its principles (by 'principle', Aquinas means a cause or a condition

⁹ *ME*, VII, lec. 2, 1275: "Unde patet quod fere eadem est divisio substantiae hic posita, cum illa quae ponitur in praedicamentis. Nam per subiectum intelligitur hic substantia prima. Quod autem dixit *genus* et *universale*, quod videtur ad genus et species pertinere, continetur sub substantiis secundis. Hoc autem quod *quid erat esse* hic ponitur, sed ibi praetermittitur, quia non cadit in

initiating a certain process; thus, for example, the premises are the principles of the conclusion of an inference, the laws of nature are principles of natural happenings, and God is the (first) principle of reality); concerning predication, it looks for the realities and the principles in virtue of which our language works as it does. According to Aquinas, "essence" (or "nature", or "quiddity") is the principle which explains the relations between universals and individuals which present themselves in the study of predication. Thus, according to him, Aristotle does not mention primary and secondary substances because, although that distinction still holds on the "predicamental level", metaphysics looks for the principles because of which both primary and secondary substances are substances. The distinction, then, would neither be rejected, nor forgotten in Aristotle's *Metaphysics*, it would just be analysed and explained by looking for the reasons why *PC* holds.

In order to enquire whether the theory of substances developed in the *Metaphysics* can overcome (at least some of) the problems that we pointed out in the theory of the *Categories*, one should ask himself whether the new threefold account of priority offers a suitable criterion for the priority of substances, and whether the theory of essence can explain the relation between primary and secondary substances prompted by *PC*. In the following sections we will deal with these two problems, through an analysis of Aquinas's own developments of Aristotle's theses.

praedicamentorum ordine nisi sicut principium. Neque enim est genus neque species neque individuum, sed horum omnium formale principium."

1.3 Aquinas and the Priority of Substances

Aquinas developed his more systematic discussion of the priority of substance in the first two lectures of his commentary on the seventh book of Aristotle's *Metaphysics* (*ME.*, 7, lectures 1 and 2). In his arguments, he seems to assume two main views. Firstly, he takes the task of *Metaphysics* as that of studying reality in the sense of what exists, i.e. "being" (*ens*) or, in the terms of Bostock's translation of Aristotle, "what is" (*to on*). Since whatever can be said to be, is something which can be predicated, in one way or another, the study of being will be grounded on the study of the kinds of predication. Secondly, he takes for granted the study of predication offered by Aristotle in the *Categories*, in particular the results of *PC*, which leads towards a distinction between the ten categories (or kinds of predication) into two groups: substantial predication, on the one hand, and accidental predication, on the other (divided into nine kinds, concerning properties, relations and states).¹⁰ (Let us note that the use of the term 'accident' does not correspond completely to contemporary usage, since accidents for Aristotle and Aquinas include properties, namely what belongs to the nature of a thing as such and is not merely contingent, as 'accident' now implies). Given all this, he takes Aristotle to show, in *Metaphysics Z*, 1, that "being in the primary sense is the whatness of a thing, i.e. the being which signifies substances."¹¹ This is how he reconstructs Aristotle's argument (let us call it the '*Priority Argument*', hereafter *PA*):

That which exists of itself and is a being in an unqualified sense is prior to that which exists by reason of something else and is a being in a qualified sense.

¹⁰ In fact in *ME.* (paragraph 1274 of the first lecture of book 7) he assumes that "the term *being* is used in many senses (as has been stated in Book V, where [Aristotle] distinguished the different senses in which terms of this kind are used)." Commenting the referred passage, he notes that "being is divided into substance and accident. This is clear from the fact that [Aristotle] divides essential being into the ten predicaments, nine of which belong to the class of accident" (*ME.*, 5, 885, p. 320).

¹¹ *ME.*, 7, lec. 1, 1247, p. 426: "inter omnia entia, primum est *quod quid est*, idest ens quod significat substantiam."

But substance is a being in an unqualified sense and exists of itself, whereas all classes of beings other than substance are beings in a qualified sense and exist by reason of substance. Therefore substance is the primary kind of being.¹²

As it is clear from the context, Aquinas's distinction between being in a qualified sense and being in an unqualified sense amounts to this: a being in an unqualified sense is something which may simply be said to exist (e.g., 'a chair is', i.e. 'there is a chair' or 'a chair exists'), whereas a being in a qualified sense is something which may be said to be one way or another (e.g., 'a chair is broken' or 'a chair is white').¹³ Of course, this distinction is grounded on the fact that the verb *to be* had two senses (existential and predicamental) both in Greek and in Latin, as it still does in some modern languages. The existential sense of 'to be' is not so common in modern English: 'a chair is' is not a plainly correct way to say that a chair exists, as the Latin '*sella est*' is. The existential use, nonetheless, may still be present in English expressions such as 'there is a chair' or 'there are chairs', said in answer to a question such as 'is there anything in the room?' Although Aquinas distinguishes the two senses of this verb, he also recognises that it is not a case of homonymy (which, according to Aristotle's definition of the *Categories*, chapter one, amounts to the use of one term to refer to two completely different and unrelated referents): although in 'this is a chair' and 'this (referred to the chair) is white' the verb *to be* is used existentially and predicamentally respectively, in both cases something about the existence of the chair is said; in the first case, existence is simply stated, in the other case, it is said in what way the chair exists.

¹² *ME*, 7, lec. 1, 1248, p. 426: "Quod est per se et simpliciter in unoquoque genere, est prius eo quod est per aliud et secundum quid. Sed substantia est ens simpliciter et per seipsam: omnia autem alia genera a substantia sunt entia secundum quid et per substantiam: ergo substantia est prima inter alia entia."

¹³ Consider, for example, this statement: "when a thing begins to be white we do not say that it begins to be in an unqualified sense, but that it begins to be white. [...] Hence it is obvious that being a man signifies being in an unqualified sense, but that being white signifies being with some qualification" (Aquinas, *ME*, VII, 1, 1256). Here it seems clear that "begins to be in an unqualified sense" means "begins to exist."

Before discussing the plausibility of the major premise of the *PA* ("that which exists of itself and is a being in an unqualified sense is prior to that which exists by reason of something else and is a being in a qualified sense"),¹⁴ Aquinas suggests that the minor ("substance is a being in an unqualified sense and exists of itself, whereas all classes of beings other than substance are beings in a qualified sense and exist by reason of substance") receives support from Aristotle when he claims that

when we say of what quality a thing is we say that it is good or bad, but not that it is three feet long or a man; but when we say what it is we do not say that that it is pale or hot or three feet long, but that it is a man or a god.¹⁵

Thus, a *thing* (i.e., an individual) can be predicated in *two different ways*: we can say how it is, what properties, relations and states it has, or we can say "what it is", i.e. what kind of individual it is. This mirrors the distinction introduced by *PC*: an individual is a primary substance, which cannot be predicated of anything else, and the two kinds of predications correspond respectively to saying that properties, relations or states *are in* a subject (accidents), and to *saying things of* a subject (i.e., that they are things of certain kinds, that they are substances in the secondary sense).

The point of the last quotation from Aristotle, according to Aquinas, is to show that predications which say something *of* a subject (i.e., which say that primary substances are certain kinds of secondary substances) are predications which use the existential sense of 'being' (i.e., "being in an unqualified sense"), whereas predications which say that something is *in* a subject (i.e., predications of accidents, in the sense of the nine categories other than substance) use the predicamental sense of 'being' (i.e., "being in a qualified sense"):

¹⁴ Although the argument is not a syllogism, at least not in one of the traditional Aristotelian forms, Aquinas refers to one of the two premises as "the minor premise", since, like in normal syllogisms, it contains the term which constitutes the subject of the conclusion.

¹⁵ *Metaphysics*, Z, 1, 1028 a 15-18.

terms signifying substance express what a thing is in an unqualified sense, whereas those signifying quality do not express what a thing is in an unqualified sense, but what sort¹⁶ of thing it is. The same is true of quantity and the other genera.¹⁷

The point seems to be that saying that some x is an F , where F is a predicate semantically related to a species or a genus-concept, is attributing to x being in an unqualified sense, i.e. existence. Why would that be so? A traditional interpretation of this identity is that in order to be able to say that some x exists we have to be able to identify x , and this requires that we may decide (at least some of) the properties which necessarily belong to it among all those present in current circumstance. This, though, requires that we may be able to say that x is an F , i.e. an individual of some kind or other. Let us imagine that there is a dressed man in front of us: we can say that there is either one thing (the man plus his clothes) or, let us say, five things (the man, a pair of trousers, a shirt, two shoes) in front of us: it depends on what we take to constitute a *thing*, i.e. on what concept we apply to pick out the thing(s) which we claim to exist. So whenever we claim that there is a thing, we identify it as an individual belonging to some kind, as a thing falling under some sortal concept, in the modern (Wiggins's) sense of the term.¹⁸ On the other hand, when we say that something has some property, is in some relation with something else, or is in a certain state we assume its existence as an object of some kind (the fact that it has

¹⁶ 'Sort', here, has not to be taken in the now usual sense in which it appears in the expression 'sortal concept.' Especially after Wiggins 1980, 'sort' came to mean the species and the genus, i.e. the secondary substances, to which an individual belongs. John P. Rowan, though, the translator of Aquinas's *ME*, used it to signify categorical kinds within the category of quality.

¹⁷ *ME*, VII, 1, 1250: "illa quae significant substantiam, dicunt quid est aliquid absolute. Quae autem praedicant qualitatem, non dicunt quid est illud de quo praedicatur absolute, sed quale quid. Et simile est in quantitate, et aliis generibus."

¹⁸ The modern sense of 'sortal' referred to here is opposed to the other sense specified in note 16 above. The upshot of this argument is that there must be at least nominal essences of things, as shown by Peter Geach (1956). Metaphysically more robust essentialist conclusions are reached by Wiggins (1980 and 2001, ch. 4: "Individuative Essentialism").

being in an unqualified sense), and we attribute some qualification to its existence, we specify some way in which it exists (its being in a qualified sense).

Another distinction follows, according to Aquinas, from this distinction between qualified and unqualified senses of 'being':

From this [discussion of unqualified and qualified senses of 'being'] it is clear that substance itself is said to be a being of itself,¹⁹ because terms which simply signify substance designate what this thing is. But other classes of things are said to be beings [...] because "they belong to such a being", i.e. because they have some connection with substance, which is a being of itself.²⁰

Abstracting from the question whether the being of any thing is ultimately dependent on that which is existent per se (which is the basis of Aquinas's argument for God in *EE*), a primary substance exists of itself, i.e. independently from anything else, since being in an unqualified sense is predicated of it. Whereas things which are not substances are always predicated in a qualified sense, which means that they are predicated of something which exists *simpliciter*: when one utters 'this is a chair', one claims that there is an object of a certain kind, but when one utters 'this is white' (referred to the chair) one claims that an object (already identified, which, then, must be of a certain kind) can be qualified as having a certain property, i.e. as being white. Objects, though, can be claimed to have properties, to be in certain relations with other things, or to be in certain states only in so far as they can be identified, and this is possible only if they are of some kind. Hence, properties, relations, and states, i.e. things which are not substances, do not exist of themselves, but only in "connection with substance, which is a being of itself."

¹⁹ The expression 'a being of itself' is introduced by John P. Rowan, the English translator of *ME*, for the latin '*ens per se*.'

²⁰ *ME*, VII, 1, 1251: "Et ex hoc patet quod ipsa substantia dicitur ens ratione suiipsius, quia absolute significantia substantiam significant quid est hoc. Alia vero dicuntur entia [...] quod *sunt talis entis*, idest eo quod habent aliquam habitudinem ad substantiam quae est per se ens."

Someone may advance an objection about *PC*, which we have already considered: since the distinction between qualified and unqualified senses of 'being' is a criterion for substantiality, properties, relations and states could satisfy it, and, thus, falsify the criterion. In the case of *PC*, the problem was excluded since noun-terms for properties, relations, or states were taken to have concepts as their semantic values just as the corresponding adjectives signifying properties, relations, or states; in this way, properties, relations, and states could always be predicated of other things, unlike substances. Aquinas proposes a similar defence for the new criterion for substantiality: property, relation, and state terms, he notes, may seem to be predicable in an unqualified sense (to be "beings"), but this happens only "in the abstract", namely after the intellect, which "is capable by nature of separating things which are united in reality",²¹ has abstracted some relevant concepts from reality. For example, we may say that white is, in an unqualified sense, only if we have come to master the concept *white* after being acquainted with or otherwise related to white things through some appropriate causal links. Yet,

accidents signified in the abstract seem to be non-beings, because no one of them is fitted by nature to exist of itself. In fact the being of each of them consists in their existing in something else, and no one of them is capable of existing apart from substance. Therefore when they are signified in the abstract as though they were beings of themselves and separate from substance, they seem to be non-beings.²²

Thus accidents, which are non-essential properties, relations, and states can only be treated as substances, i.e. predicated in an unqualified sense, in the abstract; this, though, means that they do not exist of themselves in reality, but only in the mind (intellect). Hence, the two occurrences of 'white' in the two sentences 'white is

²¹ *ME*, VII, 1, 1254: "cum sit natus dividere ea quae secundum naturam coniuncta sunt."

²² *Ibid.*, 1253: "videntur accidentia in abstracto significata esse non entia, quia nihil ipsorum est aptum natum secundum se esse; immo cuiuslibet eorum esse est alteri inesse, et non est possibile aliquid

a nice colour for this window' and 'this chair is white' do not refer to two different things (e.g., a particular colour and a functional property): both the noun and the adjective are semantically related to the same thing, the accidental property of being white which cannot exist of itself, but only in a substance. The corresponding concept of *white* can exist apart from substances, but only in the intellect, not in reality. Naturally, the noun and the adjective may have semantic relations of two different kinds with the property of being white, and what these are depend on one's semantic theory. What is important is that abstract nouns for accidents (non-essential properties, relations, and states) "signify beings which inhere in something else, although they do not signify them as inhering."²³

In this way, Aquinas seems to give a satisfying support to the minor premise of *PA*, but the strength of the conclusion depends also on the possibility of supporting the major premise. Why, given the above explanation of these terms, should we accept the claim that things which have being in an unqualified sense and, therefore, are beings of themselves, are prior to those which have being in a qualified sense and, therefore, are not beings of themselves? The plausibility of this thesis will depend largely on our understanding of priority. In fact, in his interpretation of Aristotle, Aquinas suggests that the support for the major premise comes from Aristotle's threefold definition of priority. Earlier in the *Metaphysics*, Aristotle had distinguished several senses of 'priority' (*Metaphysics*, 5, 11, 1018 b 9 - 1019 a 14), but now he says that three of those senses concern substances: substances are prior in knowledge, in definition and in time.

The priority in time would be "proven" by this argument:

eorum separari a substantia; et ideo quando significantur in abstracto quasi sint secundum se entia et a substantia separata, videtur quod sint non entia."

²³ *ME*, VII, 1, 1254: "nomina abstracta accidentium significant entia quae quidem inhaerent, licet non significant ea per modum inhaerentium."

none of the other categories is capable of existing apart from substance, but substance alone is capable of existing apart from others; for no accident is found without a substance, but some substance is found without an accident. Thus it is clear that an accident does not exist when ever a substance does, but the reverse is true; and for this reason substance is prior in time.²⁴

Priority in time seems to be similar to the priority which, as we have seen, Aristotle had already defined in the *Categories*. In that case, though, priority was just defined, whereas it is now "proven", i.e. it is argued for with an argument. However, it is not clear what the argument for the temporal priority of substances is. In the first sentence of the passage above, the quantification seems to range over categories; we can rephrase it like this

- i) for each category, if it is not the category of substance, then it cannot exist apart from the category of substance; but if it is the category of substance, it can exist apart from any other category.

On the other hand, the second sentence seems to range over individuals (individual accidents and substances); it can be thus rephrased:

- ii) it is not the case that there is a thing which is an individual accident and which can be found without a substance, but there are things which are substances and can be found without any accidents.

(These claims open some puzzling questions: what does 'existing apart' mean? What does 'be found without' mean? Let us just assume that '*a* exists apart from *b*' is equivalent to '*a* is found without *b*', and that they both mean that *a* and *b* are not in a inherence relation).

²⁴ *Ibid.*, 1257: "nullum aliorum praedicamentorum est separabile a substantia, sola autem substantia est separabilis ab aliis: nullum enim accidens invenitur sine substantia, sed aliqua substantia invenitur

The third sentence ("thus it is clear that an accident does not exist whenever a substance does, but the reverse is true") is meant to follow from the previous two, since it begins with the word 'thus.' A normal way of interpreting it would be to see it as a conjunction of two material implications; granting a charitable interpretation of the negation contained in it, such as to rule out some clearly implausible literary readings, it can then be interpreted as follows: it is not the case that for each thing, if it is a substance then there is an accident; but it is the case that for each thing, if it is an accident then there is a substance.

This reading has the merit of showing that the sentence under discussion follows from (ii): it means, in fact, that there are substances which exist without any accidents, and this is precisely what (ii) claims. However, this reading has also a problem, since it does not explain how the fourth claim of Aquinas's argument (i.e., the conclusion) is supposed to follow from it: the conclusion is that there is a temporal priority of substances, but there is no reference to time in the "material conditional" reading of Aquinas's third claim. Thus, it is reasonable to look for a different reading of that claim which may involve a reference to a temporal order of the relation between substance and accidents. A further reason to do this is that Aquinas uses the expression 'whenever', which can be read as 'if', but also as 'at any time t when.' A straightforward way of rendering Aquinas's claim, then, would be this: it is not the case that for each time t , and for each x , if x is a substance and x exists at t , then there is a y which is an accident and exists at t ; but for each time t , and each x , if there is an x which is an accident and x exists at t , then necessarily there is a y such that y is a substance and y exists at t .

invenitur sine accidente. Et sic patet, quod non quodcumque est substantia, est accidens, sed e contrario: et propter hoc substantia est prior tempore."

However, this does not take us very far, since it involves a reference to time which does not add anything relevant to the simple double material conditional reading. In order to spell out Aquinas's reference to time, it might be suggested, we need to rephrase his statement as follows: "thus, it is clear that an accident does not *already* exist whenever a substance *comes into existence*, but the reverse is true", namely:

- iii) For each time t , it is not the case that for each x , if x is a substance at t , then, there is a y which is an accident of x at t' (where $t \geq t'$), but for each time t , and for each x , if x is an accident at t , then, there is a y such that y is a substance and x is in y and at t' (where $t \geq t'$).

It seems clear that the conclusion that substances are prior in time follows from (iii); but, how is (iii) supported by (i) and (ii)? Since the sentence rephrased as (ii) begins with the word 'for' *and* follows immediately that rephrased as (i), Aquinas surely meant to infer (i) from (ii), and (iii) from (i). Since our aim is to discuss the plausibility of Aquinas's conclusion, we can work out the process backwards. Granted that the conclusion that substances are prior in time does follow from (iii), how does (iii) follow from (i)? A major difficulty in understanding this has to do with the fact that (i) quantifies over categories, whereas (iii) quantifies over individual things: thus, (i) is about secondary substances (universals), but (iii) is about primary substances (concrete particulars). At least *prima facie*, no reason is given to suggest that what holds for universals, holds for the individuals which fall under them. It is, thus, rather natural to suspect that Aquinas does not distinguish (as Aristotle and he often do not) concepts from things falling under them. If so, in order to make the argument work, (i) should be changed:

(i*) for each thing, if it does *not* fall under a substance concept, then it cannot exist apart from a substance; but if it falls under a substance concept, then it can exist apart from things falling under concepts belonging to any other categories.

This is not what Aquinas wrote, but it is what he should have written. The reasons he did not do so could depend on his (plausible) sharing in Aristotle's failure, in the *Categories*, to distinguish between individual properties and property concepts. If this is so, Aquinas's first sentence in the passage under discussion would be ambiguous between the two readings, (i) and (i*): the latter, then, could be a sensible alternative.

It is important to note the modality of (i*): substances are capable of existing apart from accidents, but not *vice versa*, i.e., things which are not substances necessarily are in a relation of inherence (do not exist apart) with things which are substances, whereas things which are substances may be in such a relation with things which are accidents, but they also may not. This is why (i*) can follow from (ii): according to the latter there are substances in an inherence relation with no accidents, but there are no accidents in an inhering relation with no substance. Therefore, if something is an accident, it must, of metaphysical necessity, be in an inherence relation with a substance, but a substance can, but does not need, of metaphysical possibility, be in a inherence relation with an accident.

To see how (iii) follows from (i*), we have to consider the distinction between the two kinds of being previously discussed: granted that distinction, (i*) means that if something has being in a qualified sense, then it necessarily has being in an unqualified sense, whereas if something has being in an unqualified sense, then it

only possibly has being in a qualified sense. Thus when something comes to have some being in a qualified sense, necessarily it already has being in an unqualified sense and, thus, (iii) is true.

Although all this makes some sense of Aquinas's claims and makes them plausible, the argument seems to have a problem. In fact, (i*) is supported through the claim that there are some substances without accidents (God, angels, mathematical entities), but no accidents which do not inhere in any substances. This is why, as we saw, the modality involved is metaphysical. In this way, though, it seems that the conclusion that substances are prior in time should hold only for *some* substances, i.e. those "found without an accident." Let us suppose that I am the only person in the world and that I think about God: if we grant that the creation of the world was a necessary act, we can conclude that, when I start to think of him, God comes to have an accident, which is his only one, i.e. he comes to be in the relation 'is thought by' with me.²⁵ God, then, is temporally prior than all his accidents. Substances which cannot be "found without an accident", though, would not need to be temporally prior to their accidents. Thus, in order for the conclusion to hold for all kinds of substances, i.e. those which can be "found without an accident" and those which cannot, we need a stronger notion of necessity in (i*).

Although Aquinas does not deal with this problem, he seems to have the resources to do so. For example, he could have avoided supporting (i*) by means of

²⁵ Someone could object that relations of this sort are not 'real' accidents of the things which are in them. Indeed, if one accepts the distinction between 'intrinsic' and 'extrinsic' denomination, one could maintain that expressions referring to such relations do not pick any internal property of the object which is in the relevant relation. Thus, they do not refer to one of its 'real' accidents. One way to meet this objection would be to offer a better example, clearly involving a real accident of God. E.g., a providential act of God. However, it is contentious that there may be acts of God which are accidental in this sense, i.e. which are not necessitated by Divine infinite goodness. Another way to meet the objection, one which does not lead towards the tricky issues concerning God's free will, could be to insist that, no matter what one's views about intrinsic and extrinsic denominations are, a relation of the sort suggested above is a good enough example of an accident, since it clearly involves one of Aristotle's non-substantial categories.

(ii), by suggesting that it is simply a consequence of the distinction between the two kinds of being, as we have just seen: it is necessary that something which has being in a qualified sense has also being in an unqualified sense, since accidents can only be predicated of objects which have an identity, and, as we saw, an object has an identity only if it falls under some sortal concept, namely if it has being in an unqualified sense. Being red, for example, is necessarily a property of a being in an unqualified sense, let's say a chair. In this case, the necessity does not depend on metaphysical facts concerning the actual existence of substances having no accidents, but only on the nature of the distinction between the two kinds of being. Each instance of a property, relation or state, then, is the particular instance it is because of the fact that it inheres in the substance to which it actually does, whereas substances could have other properties, relations and states than they actually do. (i*), thus, has to be read as:

(i*_b) For each x , if it is not the case that x is a substance, then there is a y such that necessarily (y is a substance, x inheres in y , and y is unique); and, for each x , if x is a substance then for each y , if y is an accident and y inheres in x , then it is possible that y does not inhere in x .

Although (iii) does not follow from this, an accordingly modified (and compatible) interpretation of the claim of which it is a reading does:

(iii*) For each time t , for each x and for each y , if x is a substance starting to exist at time t and y is an accident inhering in x , then for each time t' , if y started to exist at t' , then *necessarily* $t \leq t'$. But for each time t , for each x , each y , if x is an accident inhering in y from time t , and y is a substance, then for each t' , if y started to exist at t' , then it is possible that $t > t'$.

That is to say, since any accident is necessarily an accident of some particular substance, but no substance must have a particular accident, any of the accidents of a substance could start existing at any time when the substance exist, but not before, whereas any substance could start existing before any of its accidents. This is for any substance, no matter if having being in the unqualified sense only (as abstract object, God and angels can), or also in a qualified sense as well (as all material substances seem to). From (iii*), furthermore, one can conclude that substances are prior than accidents in time.

One could put forward, however, an objection which we have already mentioned about Aristotle's formulation of priority in the *Categories*: could the whiteness of the statue endure longer than the statue, or the whiteness of Socrates persist after his death? If it is so, then accidents can exist independently of the substance in which they inhere. The whiteness of the statue, for example, could be the whiteness of some pieces of marble, or the whiteness of Socrates could become the whiteness of a corp. A reply to this objection could be that the whiteness of the statue and that of Socrates are not directly their properties, rather they are properties of the matter they are made of, i.e. marble and flesh. Thus, the subjects in which those instances of whiteness exist do not stop existing when the statue is broken or Socrates dies.

Aquinas follows Aristotle also in claiming that substances are prior in definition:

in the definition of any accident it is necessary to include the definition of substance; for just as nose is given in the definition of snub, so too the proper subject of any accident is given in the definition of that accident.²⁶

²⁶ *Ibid.*, 1258: "in definitione cuiuslibet accidentium oportet ponere definitionem substantiae. Sicut enim in definitione simi ponitur nasus, ita in definitione cuiuslibet accidentis ponitur proprium eius subiectum."

In defining any property, relation, or state, one needs to specify the kinds of objects which have the property or are involved in the relation or the state. A complete definition, then, will require also a definition of the relevant kinds of objects. For example, in order to define the property of being white, one needs to explain what sort of things can have it, i.e. one needs to define what a corporeal or sensible object is. As in the previous case, the priority in question is grounded on the distinction between the two kinds of being. What sort of being in a qualified sense an object may have depends on what sort of being in an unqualified sense it has. Thus, explaining (through a definition) its being in a qualified sense requires a reference to its being in an unqualified sense.

The last kind of priority of substances admitted by Aristotle and Aquinas is priority *in knowledge*:

that is first in the order of knowing which is better known and explains a thing better. Now a thing is better known when its substance is known rather than when its quality or quantity is known; for we think we know each thing best when we know what man is or what fire is, rather than when we know of what sort it is or how much it is or when we know it according to any of the other categories.²⁷

Knowledge of substance is prior because it is by grasping what sort (in the modern sense) of thing something is that we can understand why it has certain properties. Again, this kind of priority is a consequence of the distinction between two kinds of being: it is because of being (in an unqualified sense) of a certain kind, that something may be (in a qualified sense) in certain ways, and, thus, the former thing explains the latter. The previous example may still be useful: an object may have the

²⁷ *Ibid.*, 1259: "Illud enim est primum secundum cognitionem, quod est magis notum et magis manifestat rem. Res autem unaquaeque magis noscitur, quando scitur eius substantia, quam quando scitur eius quantitas aut qualitas. Tunc enim putamus nos maxime scire singula, quando noscitur quid

property of being coloured (e.g., white) because it is a corporeal substance of some sort; thus, its being coloured can be explained through its being corporeal. This is the kind of priority in knowledge which usually Aquinas, following Aristotle, calls priority *in nature*, and has to be distinguished from priority in knowledge *for us*: accidents are prior in knowledge *for us*, since it is by being previously acquainted with accidents that we can subsequently figure out what is the substance in which they inhere.

One way of putting this distinction might be in terms of a contrast between *explanatory* (from substance to accident) and *exploratory* (from accident to substance) priorities, the former being priority in nature, the latter in knowledge. Both priorities are epistemological, since they concern – respectively – what counts as a good explanation for us, and how we can understand of what sort something is.

1.4 The Priority of Substances: Some Objections Considered

In the previous section, we have seen that Aquinas followed an Aristotelian route to support the view that substances are metaphysically prior. That line of argument is grounded on assumptions concerning the ways in which particulars can be identified and predicated by us. One could object that any result it may reach concerns only our epistemic access to the world, not the world as it is. How can we be certain that our conceptual framework and the real structure of the world fit with each other? A defence of the fitting thesis, supporting both the Aristotelian direction of fitness (world-mind) and the Kantian opposite direction (mind-world), was

est homo aut ignis, magis quam quando cognoscimus quale est aut quantum, aut ubi, aut secundum aliquod aliud praedicamentum."

famously suggested by Peter Strawson (1959) with his use of transcendental arguments: according to him, the existence of the basic particulars which we locate in a spatio-temporal framework of thought is a necessary condition of our capacity to identify, re-identify and refer to things. Consequently, he supported *descriptive metaphysics*, which is based on "the actual structure of our thought about the world (Strawson 1959, 9), against *revisionist* metaphysics, which aims at a replacement of our ordinary thinking about the world in favour of a radically different (now usually physicalist) one.

Strawson's defence of his quasi-Aristotelian approach to metaphysics has received a number of resolute criticisms. A recent one, which is particularly interesting in this context, is due to Peter Simons (1998). Simons agrees with Strawson that our everyday thinking about the world cannot but be committed to the thought that Aristotelian primary substances, i.e. individuals, are the basic primary constituents of reality. A clear case which shows how our thinking cannot renounce the priority of substances is, according to Simons, the role of the latter in explaining change. Aristotle, in fact, gave an account of change as the result of some substance having different and incompatible attributes at different times. A common criticism which goes as far back as Broad (1933), Simons notes, holds the view that substances cannot really be used to explain change because they are *continuants*, i.e. three-dimensional objects lacking the dimension of time, and this makes it impossible to account for the fact that an individual is present as whole at any time at which it exists. As an alternative, Broad suggested that they should be replaced by *occurrents*, i.e. four-dimensional objects.

Simons distinguishes two brands of this revisionist metaphysics, that he calls the *replacement position* and the *reconstrual position*. According to the former "talk

about [continuants] should be replaced by talk about suitable occurrents" (1998, 239), and, according to the latter, continuants "are in fact already occurrents" (*ibid.*, 240), and our language and thinking about the world should be reconstructed accordingly. Simons complains that the reconstrual position is unsatisfying since

We should not wish the replacement ontology to be weaker in expressive power than the one it replaced, and the idea that either the same predicates that we already use or some trivial syntactic modification of them will automatically serve up a rich enough vocabulary remains in [his] view an hypothesis completely untested in details as it should be if it is to be made credible.²⁸

The reconstrual position, though, is in no better position, since it assumes that continuants are occurrents, but this is impossible since "the objects having the contrary properties, the temporal parts, do not survive the change."²⁹ Simons can thus conclude that

attempts to shoulder aside the notion of a continuant everyday substance perduring through time fail. The notion is entrenched in our ordinary everyday way of thinking and speaking and it would require a conceptual revolution of unprecedented magnitude to remove or replace it. The motives of those wishing to proclaim its demise are legitimate: they are those of conceptual clarity and conformity to scientific progress. The motives are honourable, but their target is misplaced.³⁰

After defending Strawson's point as far as the "everyday" notion of substance is concerned, he can go on to attack the metaphysical bearing of that notion. He advances a revisionary metaphysics, which leaves the everyday notion of substance untouched, but aims at higher "conceptual clarity and conformity to scientific progress." The ingredients are the denial that substances are metaphysically prior, and the claim that they are analysable as bundles of tropes. In his view, priority has to be accorded to tropes and the formal relations which bind them together. Everyday

²⁸ Simons 1998, 240.

²⁹ *Ibid.*, 241.

³⁰ *Ibid.*, 242.

substances can still be claimed to have unity and relative independence, since a nucleus of tropes, each of which is necessary to all of the others, constitutes an individual essence while accidental characteristics are catered for by a peripheral halo of tropes which may be exchanged. The theory is flexible in allowing the extreme cases of bundles without nuclei and also bundles without halos.³¹ Unlike other trope theorists, Simons does not take the binding relations between tropes as mere spatial or spatiotemporal compresence, but as formal relations (i.e., not themselves tropes) of existential dependence, which he defines in an Aristotelian manner. Everyday substances are usually more than just a single trope bundle, but are made of parts which are in turn material objects.

Only objects without parts in the common or garden sense are pure bundles of tropes and nothing else. Everything else is a whole of parts which are wholes of parts which are... etc. until we come to the parts which are as they are not because they have parts, but because they are bundles of tropes. How larger things are may or may not be determined by how their ultimate parts are and are related; the occurrence of holistic or Gestalt quality tropes dependent on the larger wholes is not ruled out, nor is the emergence of tropes unpredictable from the properties of their bearer's parts.³²

This, according to Simons, leads him towards a kind of metaphysics which is consistent with Strawsonian descriptive metaphysics in maintaining the centrality of individuals and the epistemic priority of substances, but which is also revisionary since it claims that substances are not metaphysically prior, and attempts to "explain what everyday substances are and how they behave in terms of other more fundamental entities, which are far from first in the order of knowledge."³³ The advantage of such a view is that it can take into account everyday substances and the results of science, the entities of which cannot be accounted for by traditional

³¹ *Ibid.*, 243.

³² *Ibid.*, 244.

³³ *Ibid.*, 247.

Aristotelian metaphysics, at the same time: this is a due aim, since "a metaphysics which does not aspire to universality does not deserve the name."³⁴

Because of the results of science, descriptive metaphysics nowadays faces several problems, according to Simons: first of all, sub-atomic particles do not seem to meet the identification criteria that substances have within descriptive metaphysics. Secondly, it is not clear where the boundaries between different living species are. Thirdly, it is dubious whether some living organisms are individual entities or colonies of several entities (e.g., sponges). Lastly, living organisms (a mammal) or large size objects (the sun) lack perfectly clear boundaries, since there are parts of matter for which it cannot be determined if they belong to them or not: "if it is indeterminate what an object's part are, it can be indeterminate which object it is, if any."³⁵

Simons concludes that "as a fundamental metaphysical primitive, [substance] belongs, like horse and cart, to a bygone age. Neither the vehicle nor the concept will take us to the stars."³⁶

I would like to argue that Simons's points, although they have the merit of enlightening a number a central issues which descriptive metaphysics should address, do not succeed in establishing the need of revisionary metaphysics. The descriptive metaphysics of the enduring tradition which started with Aristotle, continued through the Middle Ages, and is pursued by Strawson, can meet Simons's challenges, at least as well as his proposed trope bundle theory.

First, Simons claims that descriptive metaphysics takes substances to be metaphysically prior and, thus, cannot but fail to settle in its frame the entities introduced by modern science. Thanks to the results of science and the enlargement

³⁴ *Ibid.*, 247.

³⁵ *Ibid.*, 249.

of our understanding of matter, Simons says, now we know that substances are not metaphysically prior, but composed of more fundamental entities. I think it is highly disputable that traditional descriptive metaphysics cannot deal with this problem. As we will see in more detail in the next two sections, in order to explain the fact that substances can be generated and destroyed, Aquinas, following Aristotle, argued that there must be a substratum persisting through generation and destruction: this is *prime matter*, which constitutes all material objects, but, since it lacks any characteristic, it cannot be known otherwise than as the component of some material object. Thus, Aquinas and Aristotle even claim that in some sense matter must be prior to individual substances. They also supported the thesis that there is *proximate matter*: some things are not immediately composed of prime matter, but of objects in which prime matter has already received some form. It seem, therefore, that one cannot deny, at least *prima facie*, that Aquinas's theory has the resources which may allow him (or a contemporary follower of his) to work out an account of how the discoveries of contemporary physics can be accommodated in his metaphysical framework. I am not expecting to show how this can be done successfully (of course, this would require a project of its own), nor aspire I to claim that the resources available to Aquinas constitute a sound theory (this will be discussed in the two following section). However, one cannot deny that this line may be as much as followed.

Second, the point of Aquinas's claim about the priority of substances is that although substances are composed of prime and/or proximate matter, they are prior because their properties, relations and states, both essential and accidental, (namely all the things which may be predicated of them either in an unqualified sense or in a qualified sense, respectively) can only be predicated of them, not of the matter they

³⁶ *Ibid.*, 251.

are made of. This is because accidents are not due only to the matter which constitute substances, but also to the *form*, which turns matter into a substance. Simons's "formal relation" holding among tropes or among the trope bundles which constitute middle sized substances, though, are prior in just the same way. As he says, such formal relations and the higher level properties, relations and states they originate are unforeseeable at the substances' constituents' level: they are a result of those constituents being tied together in a formal relation, and can only be predicated of the resulting individual. The resulting individual, then, will be prior just as descriptive metaphysics claims.

Third, from the fact that the boundaries of some substances are more vague than those of others, it does not follow that there are no substances at all. Aquinas, as we shall also see, admitted a variety of kinds of forms, i.e. principles of organisation which turn some prime and/or proximate matter into an individual substance. Thus he admitted different criteria for speaking of unity and individuality. The same criteria and the same degree of precision which may allow one to state that certain things are or are not parts of a human being may not be the same which allow one to say that some things are or are not parts of the sun. All criteria, however, in some cases may fail: it may be indeterminate whether some things belong to a certain substance or not; but this is not enough to claim the indeterminacy goes all the way down to the metaphysical level and jeopardises the claim that there are substances. At least, so far as it is not disputable that some objects certainly *are parts* of a certain substance, we have no reason to claim that there is not substance because it is not determinate if other things are also parts of it. Similarly, the plurality of principles of organisation admitted by Aquinas, may allow one to explain the difference between the way in which sponges are individuals, and the way in which humans are

individuals. What constitutes an unity may vary in different cases, and it is a question of empirical evidence, rather than decidable *a priori* through an universally applicable criterion.

Fourth, it is true that the advancement of our knowledge of living things, particularly modern evolutionary theory, made us understand that there are no clear boundaries between species. Nonetheless, this does not necessarily count against the traditional Aristotelian grouping of biological entities in species. In fact, such grouping, based on morphological and functional characteristics of organisms, is still practised by taxonomists, who cannot renounce the concept of *species*. Although the concept of species they use may in some cases be quite far from the Aristotelian (or we should rather say Linnaeus's) concept, it is still a subject of much debate which conception of species has to be accepted. However, so long as it is held that animals and plants fall within natural kind classes we have a relevant notion of species, although it may not be as metaphysically robust as that of Aristotle. Alternative conceptions, furthermore, do not seem to solve the problem of vagueness. Let us take, as an example, Ghiselin's (1974) theory, still a favourite among taxonomists, according to which species are individual objects, and individual organisms are not exemplifications, but parts of species. As in Aristotle's conception of species, also in this case there will be many organisms which will not be clearly parts of one species or another. Until a new conception of species, incompatible with Aristotle's, has solved this problem and has universally imposed itself, we cannot discharge Aristotle's based on the fact that it has to face the problem of unclear boundaries between species.

Fifth and finally, it is not clear why Simons's trope theory would be any better off than traditional descriptive metaphysics in addressing several of the objections he

advanced. Let us take a large object, which is a bundle of bundles, of bundles... of tropes, for example the sun, and ask ourselves if some amount of incandescent matter at the edge of its surface belongs to it. Naturally, that amount of incandescent matter may be a bundle of bundles of bundles... of tropes as well. Now, it may be asked if such a bundle of bundles is a part of the bigger bundle of bundles that we call the sun. In many cases this may be indeterminate, just as it was for the substances of descriptive metaphysics. The fact that Simons claims that a bundle is not a prior entity is not really helpful: assuming that, contrary to what I have suggested above is the case, still the formal relation which holds among lower level bundles or among tropes is not an epistemic notion, in the sense that it is not up to us or to our cognitive faculties to determine which things it binds together. Thus, it should be determinate for each thing if it is bound within that formal relation or not. The case of the sun, though, shows that this does not happen. Similarly, since formal relations binding together large bundles are not epistemic notions, it cannot be argued that the boundaries between species are vague because of our lack of knowledge: although substances end up not being prior, he takes everyday substance talk to be determined by the (metaphysical, not epistemical) formal relations which bound bundles together; also in this case, thus, the vagueness in question is metaphysical. Finally, since Simons's tropes can be identified, reidentified, and referred to, it is not clear why his trope based metaphysics should be in a better position than traditional descriptive metaphysics in accounting for the bizarre entities of contemporary physics.

It may be concluded that, although it might be true that traditional descriptive metaphysics, as metaphysics of all brands, needs to deal with the problems raised by contemporary science in order to be universal in Simons's sense, it is also true that it

cannot *prima facie* be excluded that it has the resources to do so. I will not try to develop such a project here, but in the next two sections I will discuss the plausibility and consistency of such resources, which were already mentioned above: in next section I will discuss the notion of substantial form, and in the following the notion of matter.

1.5 Hylomorphic Composition and Substantial Forms

I have suggested a defence of Aquinas's thesis about the priority of substances which is heavily based on the claim that substances are composed of form and matter. This thesis now needs to be discussed. The notion of form as a component of a primary substance, furthermore, will allow us to consider a problem already mentioned above (section 1.2), that of the relationship between primary and secondary substances.

Aquinas's main reason to introduce a distinction between matter and form as the components of each sensible being depends on some considerations concerning the possibility of "motion" (i.e., change). In his *Physics*, Aristotle attempted to give an account of motion, that he understood as change in a wide sense, including not only local change, but also qualitative and quantitative changes, changes of states, etc. His analysis of motion was based on the realisation that in any case of change there is some substratum which undergoes the change. For example, in the event of a green unripe apple turning red, there is one object, the apple, which has one property at one time and subsequently loses it and acquires a different, incompatible property

of the same categorical kind. The apple is a substratum which undergoes the change, and has one property at one time and another incompatible one at another time.

This kind of change may only concern accidental being: the occurrence of an event of change consists in the endurance of a being (in an unqualified sense), which comes to be (in a qualified sense) in two different and incompatible ways at two different times. Thus, it amounts to the succession of different and incompatible accidents (properties, relations, and states) inhering in the same substance. Consequently, it may be called *accidental change*. However, this cannot be the only kind of change, since the coming into being and the ceasing to be (what Aristotle calls *generation* and *corruption*) of substances cannot be accounted for in terms of a substance having different and incompatible attributes at different times. On the other hand, having defined change as the event of something being in incompatible ways at successive times, Aristotle is forced to admit that also in the cases of generation and corruption there must be a substratum which undergoes a relevant modification. He calls 'matter' (or 'prime matter') such a substratum:

For my definition matter is just this- the primary substratum of each thing from which it comes to be without qualification, and which persists in the result.³⁷

Thus, in cases of generation and corruption something (a substance) comes to be or goes out of existence in an unqualified sense, but since all changes are changes of something, according to Aristotle, there must be something which undergoes generation and corruption. Aquinas, which shares Aristotle's view, is very clear about the structure of this argument:

[Aristotle] says that in sensible substances we must posit matter as substance and subject. For in every change between contraries, there must be a subject common to the termini of the change. For example in change of place there is a common subject which is now here and afterwards somewhere else [...]. Hence, since there is substantial change, that is, generation and corruption,

³⁷ *Physics*, 192 a 30-4.

there must be a common subject which underlies the opposite changes of generation and corruption.³⁸

Matter is what may become one substance or other, but it is not any particular kind of stuff, nor has it any characteristics *per se*. In fact, matter *is not* in an unqualified sense, i.e. has not existence as such: when it comes to be in an unqualified sense it always exists as the matter of a substance of some kind or other, and, therefore, when existing, it is not pure matter.³⁹ In generation and corruption, matter becomes some individual substance or ceases to be one, because it receives or loses a certain *form*. Form is a structuring principle which turns matter into an object of some kind. Matter cannot exist without being structured by some form: any existing thing is such in virtue of being in an unqualified sense; since matter is the substratum which receives being in an unqualified sense when a substance is generated, and loses it when a substance is corrupted, it cannot have being unless it enters in the composition of some substance or other. Even in cases of corruption, matter does not simply enter in a state in which it is not structured by any form,⁴⁰ but it always receives a new form structuring it, and in this way it contributes to the generation of a new substance.

Matter is thus a metaphysical (as opposed to physical) notion: it is not any kind of stuff which may be the object of empirical experience independently from the things which it contributes to constitute. Its nature and its existence, consequently,

³⁸ *ME*, VIII, 1, 1688: "necesse est in substantiis sensibilibus ponere materiam quasi substantiam et subiectum. In omni enim mutatione oportet esse subiectum commune terminis mutationis in contrariis mutationibus; sicut in mutatione secundum locum est aliquod commune subiectum, quod nunc est hic, et iterum alibi. [...] Cum igitur sit quaedam mutatio secundum substantiam, scilicet generatio et corruptio: oportet esse aliquod commune subiectum, quod subiiciatur contrariis mutationibus secundum generationem et corruptionem."

³⁹ This seems equivalent to the puzzling claim "whenever prime matter exists, it is not prime matter." A solution to this apparent inconsistency is suggested in Hughes 1998.

⁴⁰ It is questionable even that this could be called a 'state', since something may be in a state if it has some structure and if it exists, but unformed matter is unstructured by definition of 'form', and has no existence.

cannot be empirically accessed, but may only be arrived to through reasoning. In particular, it needs to be introduced in a metaphysical analysis of reality in order to explain change: things can be generated and corrupted, but some underlying substratum of such processes has to be assumed to exist.

Like matter, forms of material things cannot exist in reality unless they are informing some particular matter and, thus, contributing to the constitution of a primary substance. Forms are not ethereal entities pervading a rough material substratum, but they are the principles of organisation and the formal relations between parts through which only matter can have existence. When matter loses its structure and organisation, form is lost and the substance that they were constituting together is corrupted, although a new form will organise that matter and generate a new substance. Thus, matter and form⁴¹ can never exist apart from an individual concrete being which each of them contribute to constitute.

In one sense substance means matter, and in another form, and still in another the thing composed of these. For matter is called substance, not as though it were a being considered to have actual existence in itself, but as something capable of being actual (and this is said to be a particular thing). And form, which is also termed the intelligible structure because the intelligible structure of the species is derived from it, is called substance in as much as it is something actual, and in as much as it is separable from matter in thought but not in reality. And the thing composed of these is called substance in as much as it is something "separable in an absolute sense", i.e., capable of existing separately by itself in reality; and it alone is the subject to generation and corruption.⁴²

⁴¹ As we shall see in the following chapters, according to Aquinas, forms can exist either naturally or intentionally. This claim is only referred to the natural existence of forms: to forms which exist independently from a mind.

⁴² *ME*, VIII, 1, 1687: "Sed sciendum est, quod materia aliter dicitur substantia, et aliter forma, et aliter compositum. Materia enim dicitur substantia non quasi ens aliquid actu existens in se considerata, sed quasi in potentia, ut sit aliquid actu, haec dicitur esse hoc aliquid. Forma vero, quae et ratio nominatur, quia ex ipsa sumitur ratio speciei, dicitur substantia quasi ens aliquid actu, et quasi ens separabile secundum rationem a materia, licet non secundum rem. Compositum vero ex his dicitur esse substantia quasi *separabile simpliciter*, idest separatim per se existere potens in rerum natura; et eius solius est generatio et corruptio."

Aquinas says that both matter and form can be called substances, as well as the individual thing, since they can only exist in reality as constituents of an individual thing, i.e. a substance in the proper sense. Matter has not actual existence, because, as we saw, it can only exist as a constituent of an individual thing; it has a disposition to become any individual thing (i.e., it is "capable of being actual"), but it cannot exist unless it is the matter of some individual thing. It is substance in the sense that it is what all material things are made of, but it is never anything apart from some material thing. Form may also be called substance, since it is what gives structure ("is also termed the intelligible structure") to matter in constituting an actual individual material thing ("it is something actual"); furthermore, it may be called a substance, since it is its form that we think of when we think about any individual material substance ("as much as it is separable from matter in thought"); however, it exists separately in thought only, "not in reality", and, then, it is not a substance having being in an unqualified sense: it only exists when it is the form of some substance or the form of thought. An individual being, instead, is a substance in the strict sense: it exists "separately by itself in reality", i.e. in an unqualified sense, and it is an individual in this sense which may be generated or corrupted.

When, in virtue of having a certain form, a thing exists in an unqualified sense, then that form is a *substantial form*. However, not all forms are of this sort: sometimes a difference in the arrangement of some aspect of the matter of a substance (i.e., some formal difference), may cause that substance to have a difference in its way of existing, without ceasing to be that particular individual. In other words, some forms do not make a thing to be in unqualified sense, but they make it to be in a qualified sense. These are *accidental forms*:

we must consider that the substantial form differs from the accidental form in this, that the accidental form does not make a thing to be "simply," but to be

"such," as heat does not make a thing to be simply, but only to be hot. Therefore by the coming of the accidental form a thing is not said to be made or generated simply, but to be made such, or to be in some particular condition; and in like manner, when an accidental form is removed, a thing is said to be corrupted, not simply, but relatively. Now the substantial form gives being simply; therefore by its coming a thing is said to be generated simply; and by its removal to be corrupted simply.⁴³

What substantial forms organise and structure is not always prime matter; it may be the case, in fact, that a thing is a thing of a certain sort because some objects, which are objects of certain sorts in their turn, are organised and structured in a certain way. A car, for example, is obtained through an arrangement of parts functionally organised with each other (an engine, a body, four wheels, etc.). Each of those parts is itself an object of a certain kind, which is obtained through a structuring principle organising some matter. All those parts together, on the other hand, constitute the matter which can be organised by the form of the car and turned into a car: it is what Aquinas calls *proximate matter*. Proximate matter is whatever a thing which is in an unqualified sense is immediately made of, and in turn it may or may not be made of some determinate matter. If it is not, besides being proximate matter, it is also prime matter.

Aristotle usually exemplifies the relation between substantial form and matter with the case of a statue. A statue is a being of a certain kind, which satisfies the requirements for substantiality and can be thus predicated in an unqualified sense. On the other hand, it can be said to be a statue because it is made of some matter, for example bronze, which is structured in a certain way by a certain form (its shape).

Aquinas, however, warns that such an example could be misleading:

⁴³ ST, I, 76, 4, c.: "considerandum est quod forma substantialis in hoc a forma accidentali differt quia forma accidentalis non dat esse simpliciter, sed esse tale, sicut calor facit suum subiectum non simpliciter esse, sed esse calidum. Et ideo cum advenit forma accidentalis, non dicitur aliquid fieri vel generari simpliciter, sed fieri tale aut aliquo modo se habens, et similiter cum recedit forma accidentalis, non dicitur aliquid corrumpi simpliciter, sed secundum quid. Forma autem substantialis

this example must not be understood to express the situation as it really is, but only according to a proportional likeness; for figure and other forms produced by art are not substances but accidents. But since figure is related to bronze in the realm of artefacts as substantial form is to matter in the realm of natural bodies, he uses this example insofar as it explains what is unknown by means of what is evident.⁴⁴

The "proportional likeness" to which Aquinas refers, is a kind of analogical reasoning often used by Aquinas:⁴⁵ if an object *a* is empirically accessible and an objects *b* is not empirically accessible, but we know that the relation between the two is sufficiently similar to the relation between two other objects, *c* and *d*, both empirically accessible, such that *c* is similar to *a* in respects relevant for the their role in the respective relations, then we can suppose that also *b* is similar to *d*, at least in respects relevant for the respective relations. In our case, we may have experience of both the shape of the statue and the bronze of which the statue is made. The statue exists in an unqualified sense, since the shape structures the bronze in a certain manner. Thus, the bronze and the shape both originate the statue (i.e., a being in an unqualified sense) by being in a certain relation one with the other, viz. the '... gives structure and organisation to...' relation. We may also have experience of a substance which exists in an unqualified sense and of its form, the cluster of characteristics because of which it falls under some sortal concept. From the argument for the existence of prime matter, we know that the form of the substance is in some relation with prime matter. It is in virtue of that relation that a being in an unqualified sense (a substance) is originated. This relation must be similar to the relation between the bronze and the shape of the statue (i.e., the relation '... gives

dat esse simpliciter, et ideo per eius adventum dicitur aliquid simpliciter generari, et per eius recessum simpliciter corrumpi."

⁴⁴ *ME*, VII, 2, 1277: "Quae quidem exemplificatio non est accipienda secundum veritatem, sed secundum similitudinem proportionis. Figura enim et aliae formae artificiales non sunt substantiae, sed accidentia quaedam. Sed quia hoc modo se habet figura ad aes in artificialibus, sicut forma substantialis ad materiam in naturalibus, pro tanto utitur hoc exemplo, ut demonstret ignotum per manifestum."

structure and organisation to...'), since in both cases the relation involved gives origin to a being in an unqualified sense. Thus, matter must be similar to bronze, in a manner which is relevant for the relation with form: just as bronze has a disposition to be structured by shape, so matter must have a disposition to be structured by form. However, Aquinas warns us, we cannot take the analogy any further: for example, we cannot think of prime matter as some sort of stuff, since prime matter, by itself, is nothing, whereas bronze is some sort of thing even when it has no characterising shape at all, i.e. even when it is not the matter of some artefact. This is why, as Aquinas says, the shape it may acquire is not a substantial form, but a mere accident: that object remains a piece of bronze, identified by the substantial form of bronze, no matter how it is shaped.

Of course, the purported analogy does suffice to reach the conclusion that there is a distinction between proximate matter and prime matter. Only considerations regarding an explanation of substantial change may lead in that direction. All that the present analogy aims to, is to explain the relationship between prime matter and substantial form as similar to the relationship between proximate matter and accidental form, in order to offer an interpretation of Aristotle's misleading example of the statue.

Through the explanation of change and the analogical interpretation of Aristotle's example of the statue, Aquinas draws a distinction between prime matter and examples of matter which have substantial forms of their own; furthermore, he claims that only the former can receive substantial forms. Any further forms organising the latter would be accidental. Aquinas, in fact, clearly stated this thesis at several points. For example, he wrote:

⁴⁵ Aquinas's uses of analogy have been studied in Ross 1981 and in McInerney 1996.

Indeed, perhaps [...] neither these particular things [i.e., a house or a vessel] nor any or the others which are not produced by nature are substances.⁴⁶

In his commentary on *De Anima*, he supported the same thesis:

Man and wood and stone are natural bodies, but a house or a saw is artificial. And of these the natural bodies seem to be more properly called substances, since artificial bodies are made out of them. Art works upon materials furnished by nature, giving these, moreover, a merely accidental form, such as a new shape and so forth; so that it is only in virtue of their matter, not their form, that artificial bodies are substances at all; they are substances because natural bodies are such. Natural bodies therefore are more properly called being such through their form as well as through their matter.⁴⁷

The point seems to be that the reason why an artefact exists in an unqualified sense, i.e. is a substance, is that it is made of some (proximate) matter which has a substantial form and thus is a substance. In other words, a statue made of bronze is a substance in the sense that it is a piece of bronze. If this is so, properly speaking it is not a substance *qua* statue, but only *qua* piece of bronze, i.e. since it is a piece of bronze which has an accidental statue-shape.

One could object that this view is inconsistent, since statues, cars, hammers and all sorts of artefacts seem to be obvious candidates for substantiality. For one thing, they seem to meet the predicamental criterion (*PC*). The individual statue can be predicated both the concept *statue*, and the definition of that concept. If we suppose that the definition of statue is "a three dimensional carved piece of art", we can say that the individual statue is a *statue*, but also that it is a *three dimensional*

⁴⁶ *ME*, VIII, 3, 1719: "dicens, quod formae artificialium forsan non sunt substantiae, nec ipsae sunt aliquid per se, unde separari non possunt. Et similiter nullum aliorum artificialium, quae non sunt secundum naturam."

⁴⁷ *CDA*, II, 1, 218: "Homo enim et lignum et lapis sunt naturalia corpora, domus et securis sunt artificialia. Magis autem videntur substantiae corpora naturalia quam artificialia, quia corpora naturalia sunt principia artificialium. Ars enim operatur ex materia quam natura ministrat; forma autem quae per artem inducitur, est forma accidentalis, sicut figura vel aliquid huiusmodi. Unde corpora artificialia non sunt in genere substantiae per suam formam, sed solum per suam materiam, quae est naturalis. Habent ergo a corporibus naturalibus quod sint substantiae. Unde corpora naturalia sunt magis substantiae quam corpora artificialia: sunt enim substantiae non solum ex parte materiae, sed etiam ex parte formae."

carved piece of art. This means that, following *PC*, the semantic value of the concept *statue* is a secondary substance. On the other hand, though, we cannot say that the statue or not even "statuehood" is in something else. We can say, for example, that a dark shade of orange is in the bronze, or that a certain size is in the bronze, but we cannot say that the statue is in the bronze. Thus, a statue must be a substance, according to *PC*. If this is so, and if from the thesis of hylomorphism it really follows that a statue cannot be a substance, but is just a piece of bronze statue-shaped, then *PC* and hylomorphism are incompatible. Therefore, Aquinas's project to find a metaphysical basis for *PC* in hylomorphism fails.

A possible reply to this, one which Aquinas seems to suggest, is that things may be substances at different degrees, and natural substances are substances in a stricter sense than artefacts. In fact, in the above passage from *CDA*, he claims that "natural bodies seem to be more properly called substances" than artefacts. This seems to suggest that artefacts can also be called substances, although "less properly." These claims are not surprising within Aquinas's framework, since he shared Aristotle's thesis according to which a single term may be used "polivocally", i.e. with meanings which are different but not completely confusing, and such that one of the meanings is *central* or *focal*, and all the others derive from it.⁴⁸ Aquinas, thus, could be taking the meaning of 'substance' according to which the term refers to natural things as the focal meaning, and the other meanings as derived from it. Thus, a thing composed of proximate matter of one or more kinds (*m1*, *m2*, *m3* ...) and of a form *F*, is a substance in the strict sense if and only if:

- a) thanks to *F*, it meets *PC*; and

⁴⁸ Cf. Aristotle's *Categories*, Ch. 1. The notion of focal meaning was developed by Austin (1938, 1940).

- b) each kind of proximate matter m_i , when it is organised and structured by F , does not satisfy PC .

Let us consider some examples. A stone is a "natural body"; a particular stone meets PC : things can be *said of* it ('it is a stone') and can be *said in* it ('it is grey'), but it cannot be *said of* nor *in* anything else; thus, it is a substance. Let us suppose that the proximate matter of the stone is a certain amount of minerals: the substantial forms of those minerals, i.e. the principles of organisation because of which a certain amount of proximate matter (for example, atoms) turn into those minerals, do not make those minerals satisfy condition a), when they contribute to the constitution of a stone. In fact, when they are constituents of a stone, they lose several of the (essential) properties and dispositions that they normally have in virtue of having those forms. Thus, the stone satisfies condition b), since, as all substances in the strict sense, it is not constituted of parts which actually have existence in the unqualified sense:

It is impossible that a substance should be composed of many substances actually present in it; for two actual things are never one actual thing, but two which are in potentiality are one actually. [...] One thing is distinguished from another by its proper form. Hence in order that many things may become one actual thing, it is necessary that all should be included under one form, and that each one should have its own form by which it would exist in act. Hence it is evident that if a particular substance is one, it will not be composed of substances actually present in it.⁴⁹

On the other hand, a bronze statue satisfies condition a), but it fails to satisfy condition b): its proximate matter (a piece of bronze) has a form (the form organising silver and copper as bronze) because of which it satisfies a), also when it is the

⁴⁹ *ME*, VII, 13, 1588: "Impossibile est enim aliquam substantiam esse ex pluribus substantiis, quae sunt in ea actu. Duo enim, quae sunt in actu, nunquam sunt unum actu; sed duo, quae sunt in potentia, sunt unum actu [...]. Unumquodque enim dividitur ab altero per propriam formam. Unde ad hoc quod aliqua fiant unum actu, oportet quod omnia concludantur sub una forma, et quod non habeant singula singulas formas, per quas sint actu. Quare patet, quod si substantia particularis est una, non erit ex substantiis in ea existentibus actu."

proximate matter of the statue. Similarly, a car is a structured and organised whole which satisfies a), but does not satisfy b), since each of the parts it is made of (its proximate matter) satisfies *PC*.

This view is grounded on the Aristotelian idea that all the things constituting proximate matter can either be combined in a whole in which they lose their original substantial forms, although the form of the whole is a result of the contributions of their forms, or can be simply mixed together so that they maintain their original substantial forms. Even if this view requires some refinement and opens puzzles which need to be dealt with,⁵⁰ it is not ultimately unintelligible: we can make sense of it if we think of the difference between combining different elements or molecules through a chemical process into a kind of stuff in which they do not have their original dispositions and properties, and mixing different kinds of stuff in a way such that small particles of the original kinds of stuff still exist with their original properties and dispositions. Sugar melt in water may be an example of the former way of combining things, and an emulsion of oil and water may be an example of the latter. Similarly, a stone can be an example of the former, and a piece of marble could be an example of the latter.

Someone could advance an objection grounded on the fact that Aquinas claimed that natural bodies are substances in a strict sense, but artefacts are not. The explanation I gave, in fact, entails both that marble, i.e. a "natural body", is not a substance, and that plastic, i.e. an artefact, is a substance, since the carbon and all the other elements constituting plastic have lost the properties and dispositions they have when they are not combined with each other, by contributing to the formation of the

⁵⁰ The view is extensively discussed by Aquinas in *DME*. A recent discussion of Aristotle's theses on this topic is in Fine 1998.

resulting composite stuff. Thus, the objector could claim, either my interpretation of Aquinas's views is wrong, or he is inconsistent.

However, I think that this objection can be answered. Aquinas's claim may be taken in a weaker sense, as asserting that natural things *can* be substances, whereas artefacts *necessarily* are not substances. On the one hand, this is consistent with the view that there are natural bodies which are substances, but there are also natural bodies which are not substances, and marble could be an example of the latter. On the other hand, although plastic is certainly a kind of stuff made by man, it could be i) taken not to be an artefact and ii) taken as being a natural body. i) An artefact is an object made of stuff(s) of some sort(s), and falls under an artefact-sortal concept because of a function which it may fulfil. Plastic, though, is a certain sort of stuff, and is not individuated functionally. ii) Although plastic does not occur spontaneously in nature, it can be artificially made because the laws of chemistry make this possible: thus, the existence of plastic is made possible by the laws of nature, and, in this sense, plastic is a natural kind of stuff. Aquinas's claim may be imprecise, and why this may be so is comprehensible, since at his times artificial kinds of stuff like plastic were not known yet, but it does not seem to be incompatible with the views I am attributing him.

Another worry concerning the views I am attributing to Aquinas may have to do with another possible counterexample: living organic bodies. These seem to count as examples of "natural bodies", and are constantly presented by Aquinas as paradigmatic cases of substances.⁵¹ However, they are individuated by forms organising proximate matters, which are constituted of things having substantial forms of their own (hands, legs, and other organs; and, at a lower level, cells). If this

⁵¹ The claim that natural substances are the paradigm of substantiality is related to the further claim that an animate substance has an intrinsic principle of life and hence is self-organising.

is true, organic bodies do not satisfy condition b), and thus they cannot be substances in the strict sense. I think, however, that this objection can also be met by Aquinas, since he shared Aristotle's idea according to which the forms of organic wholes and those of their parts are functional principles of organisation: an organ or a cell is what it is because it fulfils a certain function within the organic whole. A part of a living thing, when removed from an organic whole, acquires a different nature, stops being a (part of a) living thing, and perishes. This view is not implausible, I believe, if the functionality it involves does not concern a wide teleological explanatory picture, but only the claim that living things can not be synchronically identified: a certain leap of organs (or of cells) is a living thing only if it evolves through time in a certain way (e.g., it grows), and not in others (e.g., it does not decompose). A cell which is part of a living body and a cell removed from a body are essentially different, since they have different diachronic properties and dispositions. If this is so, the proximate matter of a living thing (i.e., its cells), when contributing to the constitution of that living thing, do not have the properties and dispositions they would have were they existing apart from the body. Thus, organic wholes satisfy also requirement b).

In conclusion, some natural bodies are substances in a strict sense because they satisfy both condition a) and condition b). Other things, although they satisfy condition a), fail to satisfy condition b). They are cases of objects which are identified by some principle structuring, organising, and giving unity to some matter, but the matter involved maintains its own substantial form. The resulting object satisfies condition a) because it falls under a sortal concept, and meets the conditions of *PC*. There are several ways in which such objects can be formed, and diverse criteria of unity are offered by different types of forms. Aquinas writes that:

some things differ by reason of the different way in which their material parts are combined: in some things the material parts are combined by being mixed, as honey-water; in others, by being tied together by some bond, as the binding around a woman's head; in others by a nail, as occurs in a chest; and in others the parts are united in several of the aforesaid ways. On the other hand, some things differ from each others by their position, as a lintel and a threshold, which differ because they are placed in such and such a way- one being above and the other below. Again, some differ in point of time, as dinner, which is the late meal, from breakfast, which is the early morning meal [...].⁵²

Thus, being a certain sort of thing may depend on different ways in which the stuff of which the thing is made may be organised. Following the previous passage, Aquinas wrote:

Because these differences are constitutive of the things we have mentioned above, it is evident that the being of the aforesaid realities is diversified according to these differences; for a difference completes the definition, which signifies the being of the thing. Thus a threshold is this particular thing "because it is placed in such and such a position", and its being, i.e., its proper intelligible structure, consists in being placed in such and such a position. Similarly, being ice is being condensed in such and such a way. And by each of the differences mentioned the being of things of certain types is differentiated: some by being mixed; others by being combined; and others by other differences, as a hand and a foot and other parts of this kind which have peculiar differences of their own inasmuch as they are directed to certain definite operations.⁵³

The definition of a thing, according to Aquinas, describes the form because of which that thing falls under a certain sortal concept. Thus, the way in which that form structures and organises matter and individuates that thing is part of the definition of

⁵² *ME*, VIII, 2, 1693: "Quaedam enim differunt secundum diversum modum compositionis partium materialium. In quibusdam enim partes materiae componuntur per modum mixtionis, sicut mellicratum: in quibusdam vero, quia ligantur a liquo vinculo, sicut est ligatura capitis mulieris: in quibusdam etiam coniunguntur aliqua colla vel visco, sicut fit in libris: in quibusdam vero adunantur partes clavo, sicut fit in arca: in quibusdam vero fit adunatio partium pluribus praedictorum modorum. Alia vero differunt abinvicem sicut positione, sicut liminare superius et liminare inferius; quae quidem differunt abinvicem, ex eo quod sic ponuntur, scilicet supra vel infra. Quaedam vero differunt tempore, ut coena, quae est comestio serotina, et prandium quod est comestio matutina."

⁵³ *Ibid.*, 1694: "quia praedictae differentiae sunt constitutivae rerum de quibus supra dictum est, manifestum quod ipsum esse praedictarum rerum toties dicitur quot sunt differentiae. Differentia enim complet definitionem significantem esse rei. Limen enim est huiusmodi, *quia ita ponitur*. Et ipsum sic poni est esse ipsius, idest propria eius ratio. Et similiter esse crystalli, est ipsum taliter inspissari. Et ex omnibus praedictis differt esse quarundam rerum: hoc quidem in eo quod commiscuntur, alia quidem in eo quod complectuntur, et alia aliis differentiis utuntur, sicut manus et pes, et aliae huiusmodi partes, quae habent proprias differentias secundum quod ordinantur ad determinatas operationes."

the thing. Each form (F) can act as a structuring and individuating principle only if it can organise some proximate matter (m) which, because of the substantial form it already has (F'), is apt to be thus structured and organised. If such structuring and organising causes the loss of essential properties and dispositions associated to the possession of its own substantial form (F') to the proximate matter (m), then the incoming form (F) is a substantial form, and the resulting object is an object in the strict sense. If proximate matter (m) can maintain the properties and dispositions it has in virtue of having a certain substantial form (F'), even after being organised and structured by the incoming form (F), then the resulting object will satisfy condition a), but fail to satisfy condition b): it will be a substance, but not in the strict sense in which an object satisfying both conditions may be.

It seems to me that this way of interpreting Aquinas's theory ofhylomorphism answers a worry advanced by Hughes (1998). In fact, according to Hughes, Aquinas supports some claims which clash with each other. On the one hand i) Aquinas often claims that no substance can have more than one substantial form, on the other ii) he thinks that an individual substance (s) is essentially composed of matter (m) and form (f) (cf. Hughes 282-4). Since Aquinas also admits that some substances may maintain their own identity even if they exchange their matter with the environment (e.g., a living thing), the matter (m) concerned in ii) cannot be prime matter, but it must be proximate matter: its proximate matter is essential for a substance, but the prime matter it is ultimately made of may change. If this is so, the matter mentioned in ii), (m), has some substantial form of its own which

may or may not be the substantial form f [of the substance s]. Suppose it is. Then m and f jointly wholly constitute the essence of s if and only if m wholly constitutes the essence of s . [...] So if m has f as its formal part, [...] either m wholly constitutes the essence of s , in which case [s is not composed of m and some form, as hylomorphism requires], or m only partially constitutes the essence of s , in which case [a composition of m and f is not enough for

constituting *s*, as hylomorphism requires]. The only way that the thick matter⁵⁴ *m* and the form *f* can jointly wholly constitute the essence of *s*, even though neither *m* nor *f* (taken individually) wholly constitutes the essence of *s*, is if the substantial form *f* is distinct from the substantial form that partially constitutes *m* - in which case the unicity of substantial form goes by the board.⁵⁵

I think that one can reply that in cases of substances in the loose sense, e.g. statues, the *f* is the substantial form of *m*, e.g. bronze. A statue satisfies condition a) in virtue of an accidental form of its matter (the statue-shape of the bronze), but fails to satisfy condition b). In cases of substances in the strict sense, instead, the substantial form of *m* is not *f*, without any risk of inconsistency with the thesis that the substantial form of *f* is unique. In fact, when *m* (which is not prime matter, as we saw) enters, as a component, in the constitution of *s*, it loses some of its essential properties and dispositions, and cannot be identified as the kind of stuff it used to be before becoming the matter of *m*. The resulting object, then is composed by an only substantial form, *f*. Of course, the substantial form that *m* had, somehow contributes to the structured now given by *f* to *s*, but does not survive the coming of *f*.

The point of claiming that there are different degrees at which something may be a substance is that in different cases the structuring principle may have a different metaphysical bearing on the identification of objects. In cases satisfying also condition b), the structuring principle intervenes on the very organisation and structuring of proximate matter, and it is this which gives unity and identity to the resulting substance; in other cases, our way of utilising and (consequently) conceptualising things may have a relevant role in individuating them,⁵⁶ although,

⁵⁴ Hughes uses the expressions 'thin matter' and 'thick matter' to refer - roughly - to prime matter and proximate matter respectively. In the next section, the issues of his uses of the two expressions will be discussed in greater detail.

⁵⁵ Hughes 1998, 284.

⁵⁶ Haldane 1996 discusses how, from Aquinas's point of view, our conceptual capacities may interact in different ways with different kinds of structures existing in reality in the identification of diverse types of substances.

the substantial form (and, thus, the identity) of the proximate matter composing them is left untouched: thus, condition a) is satisfied, but condition b) is not.

The upshot of the admission of this diversity of ways in which an object may be identified by the form in virtue of which a thing falls under a sortal concept, is that each form needs a particular kind of matter in order to be able to organise and structure it:

There are different actualities of forms for different matters. For in some things the actuality consists in being combined; in others in being mixed, or in some of the aforesaid differences.⁵⁷

Even though there is a matter common to all things [i.e., prime matter], nevertheless the proper matters of different things are different. [...] For not anything at all is naturally disposed to come into being from any matter, as saw does not come from wood.⁵⁸

Proper matter, then, is the potentiality which is required in order for a particular form to be able to actualise a substance of a certain kind. The proper matter of a certain form may be prime matter, if that form can organise prime matter directly: this may be the form of one of the four elements (air, water, fire and earth), if we accept medieval physics. But we can make sense of this notion also in modern terms: prime matter may be constituted by elementary particles, although, as we have seen in the previous section, cannot be identified as stuff of some sort, and, thus, fails to meet the requirements for substantiality. Lower level forms, in this context, could be the forms of subatomic particles which *can* be identified (electrons, protons and neutrons). At higher levels of complexity, proper matter is always stuff of some kind, and when it is organised by some form, it may maintain or lose the properties and dispositions associated with the form that it already has, being a stuff of some sort. In

⁵⁷ *ME*, VIII, 2, 1699: "diversarum materialium diversi sunt actus et formae. In quibusdam enim est actus compositio, in quibusdam commixtio, aut aliquid dictorum."

the first case, the resulting object is a substance in the proper sense; in the second case, if the incoming form is responsible for the fact that the resulting thing falls under a sortal concept, the resulting object is a substance in a looser sense.

The fact that each form can only organise proper matter is the ground for Aquinas's claim that there is a distinction between potency and act. Again, Aquinas takes this distinction from Aristotle, and develops it in his commentary of the ninth book of *Metaphysics*. This distinction corresponds to the matter-form distinction, since "form is actuality and matter is potentiality alone."⁵⁹

As we have seen, the proper matter of a certain form is the matter which, in virtue of its characteristics, is apt to be organised and structured by that form. Thus, that proper matter is *potentially* the thing which it may become when it is organised by that form. Proper matter is the proximate matter of a certain thing, since matter which is not proximate cannot be immediately turned into that thing, and thus does not have the potentiality to be that thing:

Matter is potentially a house when none of the things present in the matter prevent the house from being brought into being immediately by a single action, and when there is nothing that should be added or taken away or changed before the matter is formed into a house, as clay must be changed before bricks are made from it; and as something must be taken away from trees by hewing them and something added by joining them so that a house may be brought into being. Clay and trees, then, are not potentially houses, but bricks and wood already prepared are.⁶⁰

Clay is not the proximate and proper matter of the house and it lacks the potentiality of being turned into a house. In order for this to be possible, it must first

⁵⁸ *Ibid.*, 4, 1735: "Quia vero, licet materia prima sit communis omnibus, tamen materiae propriae sunt diversae diversorum [...]. Non enim quodlibet natum est fieri ex qualibet materia; sicut serra non fit ex ligno."

⁵⁹ *ST*, I, 76, 1, resp.: "Cum enim forma sit actus, materia vero sit ens in potentia tantum."

⁶⁰ *ME*, IX, 6, 1836: "materia est in potentia domus, quando nihil eorum quae sunt in materia, prohibet domum fieri statim una actione, nec est aliquid quod oporteat addi, vel auferri, vel mutari, antequam materia formetur in domum. Sicut lutum oportet transmutari, antequam ex eo fiant lateres: ex arboribus autem oportet aliquid auferri per dolationem, et addi per compaginationem, ad hoc quod

be turned into bricks, i.e., it has to receive a further form in order to acquire new characteristics, which grant it the potentiality of being a house. The reception of that form, however, turns them into something different, i.e. bricks. Thus, bricks, not clay, have the potentiality of being a house, and they are the proximate and proper matter of the house. Clay is still present in the house, but not as proximate and proper matter.

Form, on the other hand, is the organising and structuring principle which turns proper matter into a certain thing: in this way it *actualises* a potentiality which proper matter has: "matter has actual existence through substantial form."⁶¹ Form, then, is the act (or actuality) of the resulting substance, and "form's coming to matter makes matter actually to exist."⁶²

Aquinas distinguished also first potentiality and first actuality from second potentiality and second actuality respectively. This distinction can be illustrated with an example. Let us imagine that there is a man who does not have the skills for building a house. This man is not a builder in actuality, but, assuming that he has no relevant disabilities, is a builder in potentiality, since, as any other man, he may acquire the relevant skills. Let us imagine, now, that that man has acquired the relevant skill after a period of training, and that now he is a builder, although, at the moment he is not building. In a sense, that person is now a builder in actuality (first actuality), since he has actualised a potentiality (first potentiality) he had, by acquiring the relevant skills. However, he is not actually building, and so, in another sense, he is not a builder in actuality (second actuality), although, having all the

componatur domus. Unde lutum et arbores non sunt potentia domus, sed lateres et ligna iam praeparata."

⁶¹ *ST*, I, 76, 6, resp.: "[Materia] Esse autem in actu habet per formam substantialem."

⁶² *DSC*, 1, resp.: "forma enim adveniens materiae facit ipsam esse actu."

relevant skills, he *can* build and, thus, he is a builder in potentiality (second potentiality).

Another distinction pointed out by Aquinas is that between *active* and *passive potentiality*.⁶³ Something may be potentially something else, since because of its form (i.e., the structure and organisation it has) it may receive a different form (i.e., structure and organisation); such a thing is potentially organised and structured according to the new form: this potentiality is called *passive potentiality*, since it is a potentiality towards the reception of a new form. On the other hand, something may be potentially an agent acting on other things in certain ways, since, because of its form (i.e., the way in which it is structured and organised), it has the power to do so, although it is not doing it at the moment: this potentiality is called *active potentiality*, since it is the potentiality to act in certain ways.

1.6 Matter, Individuality, and Universals

Since form and matter are correlate constituents ofhylomorphic substances, they have been so far discussed together. However, it may be worthy to recapitulate Aquinas's views on matter in a more systematic way, since it is by using the notion of matter that Aquinas proposes a principle of individuation of substances.

Elsewhere (De Anna 2000b, p. 55-6), I have argued that we can recognise three main related notions of matter, in Aquinas's writings. Firstly, Aquinas takes matter in the sense of *pure* or *prime* matter, i.e. an uncharacterised substratum which has the potentiality of becoming all material things,⁶⁴ but which lacks any characteristic by

⁶³ cf. *ME*, IX, 1.

⁶⁴ *ST*, I, 48, 3; *ibid.*, 10, 6; *ibid.*, 23, 5; *ibid.*, 7, 2; *ibid.*, 84, 3; *ibid.*, 16, 8.

itself. Were it to be attributed some characterisation, it should have some essential properties, i.e. a form. Yet, prime matter has no form.⁶⁵ Prime matter does not exist as such, i.e. there is no thing or quantity existing antecedent to substance or inhering quasi-substantially in it. Let us call matter in this sense, '*matter*₁.' Secondly, Aquinas takes 'matter' in the sense of one of the two hylomorphic components of any corporeal thing: it has a disposition to receive a certain form, and it may be that case that it has that disposition in virtue of a form which it already possesses.⁶⁶ This is the notion of matter which was called '*proper*' above (since it is what is proper for each form to structure and organise), and which sometimes is also called '*proximate*' (since it is the closest to each form: it is what each form immediately structures and organises). In this sense, some atoms may be said to be the matter of a molecule, or a certain amount of paper may be the matter of a book, because it has the disposition to receive the form of a book, and it has that disposition because of its characteristics, i.e. because of its form. This may be called '*matter*₂.' Finally, matter may be spatial-temporally located stuff of some general sort, characterised by certain properties, and disposed to be structured and combined in certain ways. '*Matter*₃', as we may call this sense of 'matter', is the ultimate constituent of physical reality: it can be further analysed in terms of *matter*₂ and form, but its *matter*₂ is not composed of *matter*₂ and form, since it is *matter*₁. It is *matter*₃ which is the object of study of physics. On a philosophical level, acknowledgement of *matter*₃ is quite independent from the acceptance of one physical theory rather than another, and it is probably compatible with the endorsement of (potentially) *any* physical theory. It is matter in this sense that Aquinas probably considered in discussing the doctrine of the elements.⁶⁷

⁶⁵SCG, IV, 63.

⁶⁶ST, I, 66, 1: "Was created matter formless at any time prior to its diversification?"

⁶⁷ Cf., for example, SCM, 3, and DME.

It is important to note that there are potential overlaps in the extensions of these three senses of the term 'matter', although the overlaps are not complete, and, thus, the notions can be distinguished. $Matter_1$ may be the $matter_2$ of something, i.e. it may enter the hylomorphic constitution of some substances, i.e. of $matter_3$, but $matter_2$ may or may not be $matter_1$: the paper of a book is $matter_2$, but it is not $matter_1$. Similarly,

$matter_2$ and $matter_3$ are distinct notions. If something is $matter_3$ it must be also $matter_2$, but something could be $matter_2$ without being $matter_3$. For something may be $matter_2$ even if it is not spatially and temporally located (the potential intellect, for example) and/or even if, when analyzed in terms of $matter_2$ and form, its $matter_2$ has a form (for example paper may be the matter of a book, but in its own turn it is composed of matter and form).⁶⁸

As we shall see in chapter 4, Aquinas's views on hylomorphism play a central role in the account of formal causation, especially in the developed Thomistic version of it which I will propose there. In the light of this, we need to consider a similar, but incompatible, threefold distinction of the senses of 'matter' in a (widely) Aristotelian metaphysical framework, which was recently proposed by E.J. Lowe (1998). Lowe's proposal is particularly interesting in this context, not only because of the philosophical incompatibility of the suggested alternative with the theses I attributed to Aquinas, but also because Lowe himself explicitly argues against the Thomistic proposal. Lowe distinguishes:

Matter_a: proximate matter, i.e. "the concept of what a thing is immediately made of."⁶⁹ It is a relative notion, since x may be made of y , which, in turn, may be made of z , but, although x is thus made of z , it is not immediately made of z .

⁶⁸ De Anna 2002b, 56.

⁶⁹ Lowe 1998, 215.

Consequently, y is the *matter_a* of x , and z is the *matter_a* of y , but z is not the *matter_a* of x .

Matter_b: it "is the notion of a kind of stuff, that is, a kind of space-filling material which has separable parts capable of filling different parts of space."⁷⁰

Matter_c: "is the notion of *material substratum*. This is the notion of an item which provides ontological support for a thing's properties - the notion of that in which a thing's properties 'inhere.'"⁷¹ Since it is that in which properties inhere, it must be featureless: if it had any property, that property would not inhere in anything else, and, thus, we should be committed to the possibility of ungrounded properties, otherwise an infinite regress would ensue; but if we accept that possibility, we would have no reason to introduce the idea of a substratum grounding properties in the first place: the reasons which are normally put forward to introduce *matter_c* are that we have empirical evidence of the existence of properties, and that properties must be grounded in something else. An alternative, one which Lowe certainly favours,⁷² would be to claim that it is the thing itself which grounds its properties, but then it would be questionable that it is a kind of matter which constitutes the substratum of properties. Not surprisingly, therefore, Lowe concludes that things are "forms without matter."

It is not immediately clear how this threefold distinction can be mapped on the distinction I have suggested above. It seems quite clear that *matter_a* corresponds to *matter₂*. On the other hand, *matter₃* seems to be *matter_b*, but, at a closer sight, they are rather different: *matter₃* is a certain kind of stuff, like *matter_b*, but it is a fundamental constituent of reality, whereas no restriction of this kind is attributed to *matter_b*. The most interesting question in a discussion of hylomorphism, however, concerns prime

⁷⁰ *Ibid.*

⁷¹ *Ibid.*, 216.

matter (matter₁). One might suppose that prime matter is matter_e, since it is matter₃ which sustains properties and is featureless. Unexpectedly, though, Lowe claims that he does not consider prime matter separately, since "it is clearly a special case of the concept of matter as stuff of a certain kind" (*ibid.*, 219), i.e. matter_b. This is certainly false, at least as far as prime matter is taken in Aquinas's sense, i.e. as matter₁. In fact, if it were stuff of a certain kind it should have some features characterising it as a certain kind of stuff, and differentiating it from stuffs of other kinds. In other words, it should fall under some sortal concept, and, thus, it should be structured and organised by some form. Yet, as we saw, matter₁ is featureless; it can only be defined as the pure potentiality to receive some form, and no form can be granted to it as existing independently from any form (as not combined in an hyломorphic constitution). Actually, matter₁ cannot exist apart from some form, it is always the matter of some substance, whereas a stuff of a certain kind can.

The possibility that prime matter is a kind of matter_e, however, is subsequently considered by Lowe, who seems to be thinking about Aquinas (whom he mentions explicitly, as we shall see) when he recognises that "some philosophers have been inclined to identify the notion of prime matter with that of material substratum."⁷³ However, Lowe thinks that the possibility that prime matter is matter_e has to be disregarded, for two reasons. Firstly, he takes himself to have already rejected the claim that matter_e may be featureless. Secondly, he thinks that the attempt to support the view that prime matter is featureless through the idea that it "has only 'potential', as opposed to 'actual', existence" is "too dark" for him, and thus he decides to consider it "no further."⁷⁴

⁷² cf. *ibid.*, 217.

⁷³ *Ibid.*

⁷⁴ *ibid.*, 219.

It seems to me that neither of these reasons is very strong as a defeat of the view which I attributed to Aquinas. About Lowe's first alleged argument, it can be said that he never actually put it forward. When he introduces matter, he does say that "it may be objected that material substrata would have themselves to be quite featureless"⁷⁵ and then goes on to explain, as we have already seen, that this must be so, otherwise one should either accept an infinite regress of inhering properties, or to introduce groundless properties of material substrata, which undermine the main reason for which material substrata were introduced in the first place. What is important, though, is that he does not seem to offer any explanation of why featureless substrata would be problematic. He just introduces an alternative way of understanding substrata, i.e., as the individual thing in which properties inhere.

The argument he does not mention could be the usual and obvious one according to which the idea of something which is nothing is an empty one. A reply to this, on the other hand, could be that prime matter is not a "something", otherwise it would be a thing of some sort, i.e. it would have a form, and this is not the case by the definition of prime matter. Prime matter is the pure potentiality that forms may actualise things. It is a substratum in the sense that all substantial changes presuppose such potentiality, but not in the sense that it is a stuff of a special sort, i.e. featureless.

It is worth noting that the intuition according to which properties inhere in individual things, rather than in featureless material substrata, is not incompatible with Aquinas's treatment of prime matter. As we have seen, prime matter is introduced to explain substantial change, and the essential properties of a thing certainly inhere in prime matter. The accidental properties of a thing, though, do not inhere in prime matter but in the thing itself: accidental properties have being in a qualified sense, and they depend on something having being in an unqualified sense.

⁷⁵ *ibid.*, 216.

Only individual things, though, have being in an unqualified sense, since the prime matter actualised in them has no being at all by itself.

Lowe's second argument against the identity between prime matter and matter, does not seem any more convincing, if he does not explain in what sense he finds talk about actuality and potentiality of matter obscure. A natural guess would be that nothing can be said of featureless prime matter besides that it is pure potentiality; in this way, though, no positive characterisation of that notion can be offered, and it remains somehow undefined. Prime matter ends up sharing a dubious halo of mystery which is often found in metaphysics, for example in talk about noumenal reality. Although this may be a legitimate worry, it could be that metaphysical analyses cannot but lead us to the need of introducing concepts which we cannot have a complete grasp of, but which are nevertheless required by the procedure of our inquiry. Yet, unless there are direct reasons to reject the notion of prime matter, like issues of consistency or metaphysical economy, there is no need to abandon it.

On the other hand, at the beginning of section five above, we have considered the reasons which induced Aristotle to introduce the notion of prime matter. The notion of prime matter is introduced via the issue of change and permanence. In substantial change one thing ceases to be and another comes to be "in the same matter." Since there may be a total chemical change involved we need to say what is that was first this, and is now that the only answer seems to be 'matter', and in particular 'prime matter.' However, this is just to say that all stuffs have the potentiality to receive different material forms. The fact that nothing more can be said about this potentiality, and that the expression 'prime matter' seems to suggest that it is a stuff of some kind, induce the halo of mystery. However, when it is

understood in these terms, the notion of prime matter seems to originate from a genuine metaphysical demand and to play an acceptable explanatory role.

Of course, new metaphysical approaches should still be attempted, but they do not count as definitive substitutes as far as they have not proven themselves at least just as explanatory and conceptually clearer. It is not sure, at least so far, that Lowe's proposal based on the existence of forms without matter can satisfy these conditions. Thus, although it may be a legitimate possibility to investigate, it does not count as a rejection of more traditional approaches based on featureless prime matter, like Aquinas's, which have to be understood in the way just expounded. This may, in fact, be Lowe's intent, since he does not seem to presume that he has defeated the traditional view, but only that he is searching for a new, and hopefully clearer, metaphysical framework.

This explanation and this defence of Aquinas's threefold conception of matter were needed since matter plays an essential role in one of the keystones of his outlook: the principle of individuation. According to Aquinas, it is the fact of being constituted of matter which makes a thing the particular thing it is, and which differentiates it from other individuals belonging to the same species:

Things which are specifically the same, but numerically different, have different matter. For the difference which comes from form results in specific difference, while the difference which comes from matter results in numerical difference.⁷⁶

Christopher Hughes (1996, 2) noted that Aquinas's claim according to which two different things of the same species must have different matter may be read in two different ways, i.e. as:

⁷⁶ *SCG*, II, 93: "Quaecumque sunt idem specie differentia autem numero, habent materiam: differentia enim quae ex forma procedit, inducit diversitatem speciei; quae autem ex materia, inducit diversitatem secundum numerum."

(A) "For any time t , and any distinct individuals i and i' , if i and i' are members of the same species at t , then the matter of i at t is distinct from the matter of i' at t''' ,

or as:

(B) "For any times t and t' , and any distinct individuals i and i' if i is a member of a species at t , and i' is a member of that same species at t' , then the matter of i at t is distinct from the matter of i' at t''' .⁷⁷

Hughes goes on offering various arguments in favour of the idea that Aquinas really meant (B). His main and most convincing consideration is that, at several points, Aquinas claims that immaterial substances (i.e., angels) do not differ numerically one from the other, but are subsisting species differing specifically from each other;⁷⁸ moreover, he seems to suggest that there cannot be more than one individual in each individual angelic species, *not even existing at different times*;⁷⁹ Aquinas's argument for this conclusion is grounded on the premise that immaterial substances cannot differ numerically, since it is materially different things which differ numerically (SCG, II, 93); given that the conclusion is meant to hold diachronically, also the premise must be diachronically tensed: it must be that things which differ materially at the same time or at different times, differ numerically at the same time or at different times. Consequently, it is (B) which Aquinas must hold.

The view to which Aquinas seems committed, Hughes notes, is quite too strong, since "if being this substance of this kind is being a substance of this kind with this matter, then no substance can change its matter over time",⁸⁰ and this is

⁷⁷ Hughes 1996, 2.

⁷⁸ cf. SCG, II, 92 and 93.

⁷⁹ cf. ST, I, 47, 2, resp.

⁸⁰ Hughes 1996, 7.

certainly false, since several kinds of things may change the matter they are made of during their history. Furthermore, Aquinas himself seems to recognise that this is the case:

In the body of a man, while he lives, it is not with respect to the matter that he always has the same parts, but only with respect to the species. As far as the matter is concerned, the parts come and go.⁸¹

It seems, thus, that in holding (B) Aquinas both accepts an implausible view and commits himself to an inconsistency.

However, Hughes highlights some other passages by Aquinas, which, in his view, solve the inconsistency, and, in my view, also make (B) plausible. Aquinas, for example, wrote that

Form and common matter belong to a thing's true nature considered in general; signate matter and the form individuated by matter belong to the true nature considered as in this individual. Just as the human soul and body belong to the true human nature in general, this soul and this body belong to the true human nature in Peter or Martin.⁸²

Here Aquinas seems to suggest that the matter which is the principle of individuation is matter₂, i.e. the body in the case of a human being, in his example. If this is so, Hughes notes, it may be the case that the matter₁ of an individual is not required to remain unchanged throughout the history of that individual, i.e. is not expected to meet the requirement of (B). That this is what Aquinas meant can be supported by other examples; at another point of *ST*, Aquinas writes:

In natural things the matter is part of the species - not single signate matter, which is the principle of individuation, but common matter. Just as it belongs to the nature of this man to be made of this soul, and this flesh, and these

⁸¹ *SCG*, IV, 81: "In corpore autem hominis, quandiu vivit, non semper sunt eadem partes secundum materiam, sed solum secundum speciem; secundum vero materiam partes fluunt et refluunt."

⁸² *ST*, I, 119, 1, resp: "naturae alicuius in communi consideratae, pertinet forma et materia eius in communi accepta, ad veritatem autem naturae in hoc particulari consideratae, pertinet materia individualis signata, et forma per huiusmodi materiam individuata. Sicut de veritate humanae naturae in communi, est anima humana et corpus, sed de veritate humanae naturae in Petro et Martino, est haec anima et hoc corpus."

bones, so it belongs to the nature of man to be made of soul, and flesh and bones.⁸³

The impression that according to Aquinas it is matter₂ which is meant to offer a principle of individuation is most clearly stated in his commentary on Aristotle's *Metaphysics*:

Matter is the principle of individuation, not only in singular things but also in mathematical objects; for there are two kinds of matter - sensible and intelligible. By sensible matter is meant such things as bronze and wood, or many changeable matters, such as fire and water, and all things of this sort; and singular sensible things are individuated by such matter.⁸⁴

Here, Aquinas affirms explicitly that it is matter₂ which constitutes the principle of individuation.

If things stand in these terms, the inconsistency disappears: material substances are individuated by their matter₂, and thus satisfy (B), but their matter₁ may change, and this justifies Aquinas's claims to that effect. Although it is consistent, Hughes suggests that this view is implausible, since there are substances the matter₂ of which may change without compromising their identity. To begin with, Hughes considers the example of a statue: a bronze statue of St. Ambrose may be melted and reshaped as a statue of Julius Caesar; its matter₂ remains the same, and thus the two statues should be really one, but this result is quite counterintuitive. Similarly, if the wood of which a statue is made petrifies, it undergoes a substantial change, i.e. matter₂ of the statue changes: this entails that the statue should not remain the same statue; this, again, is counterintuitive.

⁸³ *ST*, I, 75, 4, resp.: "materia est pars speciei in rebus naturalibus, non quidem materia signata, quae est principium individuationis; sed materia communis. Sicut enim de ratione huius hominis est quod sit ex hac anima et his carnibus et his ossibus; ita de ratione hominis est quod sit ex anima et carnibus et ossibus."

⁸⁴ *ME*, VII, 10, 1496: "Materia autem non solum est principium individuationis in singularibus sensibilibus, sed etiam in mathematicis. Materia enim alia est sensibilis, alia intelligibilis. Sensibilis quidem ut aes et lignum, vel etiam quaelibet materia mobilis, ut ignis et aqua, et huiusmodi omnia; et a tali materia individuantur singularia sensibilia."

Hughes recognises that these counterexamples may be answered by Aquinas. In the commentary on the *Sentences* (CSE), Aquinas considers the case of a statue which is destroyed and then reconstructed; he notes that if we consider it *as a substance*, we are forced to say that the newly remade statue and the melted one are *the same statue*, since they are made of the same matter₂ and the same form (the form of statuehood). But if we consider the statue as an artificial thing, then we can say that the two statues are numerically different: once the first statue is destroyed its (accidental) form is lost, and when it is reconstructed a (numerically different) new accidental form is given to the same substance, e.g. bronze. Although Aquinas does not consider the other counterexample, a parallel reply is available, according to Hughes. In fact, if the statue is considered as an artefact:

when [it] undergoes petrification, no substance changes its thick matter,⁸⁵ because the (only) substance undergoing petrification (the bit of wood) does not survive the loss of its thick matter. On Aquinas's account, not even the shape of the statue would survive its petrification: the shape of the petrified thing would be *idem specie*, but not *numero*, with the shape of the wooden statue, inasmuch as accidents in different substances cannot be numerically identical.⁸⁶

According to Hughes, these are good replies from the Thomistic side, and they are grounded on the fact that there are "two senses"⁸⁷ of the word 'statue', one according to which 'being a substance' is part of its meaning, but 'being an artefact' is not, and one according to which the reverse is the case. I think that a better diagnosis of the reason why Aquinas's replies are cogent may depend on the fact that, according to my interpretation of Aquinas's' views, a statue is not a substance in a strict sense (cf.

⁸⁵ Hughes uses the expressions 'thin matter' and 'thick matter' to refer (almost precisely) to my matter₁ and matter₂ respectively (cf. note 53 above). The clause 'almost precisely' is due to the fact that his thick matter is not exactly my matter₂: matter₂ is something which is disposed to receive a form and this enter the constitution of a new substance, and it may or may not have a form already (i.e., it may or may not be matter₁ as well as matter₂), whereas it seems impossible that thick matter may be matter₁.

⁸⁶ Hughes 1996, p. 11.

⁸⁷ *Ibid.*

§ 1.5). Let us recall that a statue satisfies condition a) , but it fails to satisfy condition b), since its matter, e.g. the wood or the bronze, satisfies *PC*.⁸⁸ This divergence in the interpretation of the motives lying behind Aquinas's reply is not trivial: indeed, Hughes points out other possible counterexamples to (B) which cannot be met in his interpretation, but, I would like to suggest, that they can find a reply in mine.

Once more, Hughes finds useful counterexamples in Aquinas's writings, and thus rises both a question of consistency and a question of cogency at the same time:

The river Seine is not this river because of this floating water, but because of this source and this river-bed. Hence it is always called the same river, even if the water flowing down is different.⁸⁹

Thus, one and the same substances may change its matter₂, and still remain the same individual of the same kind. Aquinas makes even claims of the converse:

Things that are corrupted in their substances do not come back in the course of nature, although in the same species do: the cloud which is generated from rainwater is not numerically identical to the cloud generated again from the water which rains down and then evaporates.⁹⁰

In general terms, two things belonging to the same species may have the same matter₂ and still be two different individuals.

The strength of these new counterexamples, according to Hughes, is due to the fact that they mention cases of *naturalia*, and thus is "possible for the same *naturale* to be successively constituted by different bits of the same kind of stuff."⁹¹ The

⁸⁸ Let us recall that *PC* is the predicamental criterion, according to which a substance is "that which is neither said of a subject, nor in a subject" (cf. 1.1). Furthermore, a) and b) are the two conditions which an object needs jointly to satisfy if it is to be a substance in the strict sense; i.e. an object made of the form *F* and the matter (*m*₁, *m*₂, *m*₃, ...) is a substance in the strict sense if and only if: a) thanks to *F* it meets *PC* and b) each kind of proximate matter *m*_i, when it is organised and structured by *F*, does not satisfy *PC* (cf. 1.5).

⁸⁹ *DSC*, 9, ad 10: "fluvius Sequana non est hic fluvius propter hanc aquam fluentem, sed propter hanc originem et hunc alveum, unde semper dicitur idem fluvius, licet sit alia aqua defluens."

⁹⁰ *CT*, I, 154: "Ea vero quae secundum substantiam corrumpuntur, non reiterantur eadem numero secundum operationem naturae, sed solum secundum speciem: non enim eadem numero nubes est ex qua pluvia generatur, et quae iterum ex pluente aqua et rursus evaporante generatur."

⁹¹ Hughes 1996, 12.

importance of stressing the fact that they concern *naturalia*, seems to be that now Aquinas cannot use the same manoeuvre he used in the case of the statue: being *naturalia*, a river and the clouds cannot be taken in a second non-substantial sense as artefacts. Furthermore, they must be cases of substances, according to Hughes: first, nowhere Aquinas seems to suggest otherwise; second, the example of the cloud is introduced by Aquinas to make the point that "things that are corrupted *secundum substratum* - i.e. substances which go out of existence - don't come back";⁹² thus, he cannot have picked an example concerning non-substantial things.

I do not find these two reasons very strong. Concerning the first, we can recognise that although Aquinas does not directly deny that clouds and rivers are substances, it may be the case that he did not have any need to do that, even if that was his opinion, as I think it was. About the second point, we need to remember that it is possible that clouds are not substances in the strict sense (i.e. do not satisfy b)), but are still substances in a weaker sense (i.e., they satisfy a)). If this is so, they could qualify as suitable (although potentially confusing) examples of substances which can be destroyed. Let us remember, that Aquinas often follows Aristotle in using a statue as an example of hylomorphic composition, even if statues are not substances in the strict sense, because of their analogy with real substances (cf. above § 1.4). A parallel analogical use of clouds cannot be surprising, although unlike statues they are naturally constituted.

I would like to suggest that a river is not a substance. In fact, it may well satisfy condition a), but its matter₂ maintains the substantial form it had before entering the constitution of the river: the water has still the form of water, and the stones which make up the spring and the bed keep their original forms. Consequently, the matter₂ of a river does not receive a new structure through the

⁹² *ibid.*, 13.

form of the river, and thus the river does not satisfy condition b). If this is so, a river cannot count as a counterexample of the claim that it is the matter₂ of a substance which individuates it.

The upshot of this approach is that artefacts are not the only cases of quasi-substantial objects, i.e. objects satisfying a) while failing to satisfy b). Consequently, it may be the case that also some natural objects are individuated by quasi-substantial forms, and thus fall under sortal concepts, although they are not substances in a strict sense. This may be so since their proper matter is organised by some form giving it unity - turning it into an object falling under a certain sortal concept - while leaving its original substantial form unaltered.

Drawing on Aquinas's analysis put forward at the beginning of his *Being and Essence (EE)*, we could say that things fall under sortal concepts and thus satisfy a) when they have a certain unity granted by their structure or form. The form in question, though, could be material or immaterial, i.e. it could structure matter or not. (Immaterial substances will be discussed in next chapter). Material forms, may be composed of matter (i.e., all concrete particular) or not (e.g., force-fields). Composite objects, can be the result of aggregation (i.e., when they are made up of several smaller amounts) or concretion (i.e., when the bits of matter which make them up are cemented together). Aggregates may be either natural (e.g., a heap of leaves blown by the wind) or artificial (e.g., a heap of leaves brushed together by a sweeper). Concretions may also be either natural or artificial (e.g. a chipboard). Natural concretions may be informed by an intrinsic principle of organisation (e.g., proper substances, like trees, animals, and persons) or an extrinsic principle of organisation (e.g., marble, in which bits of different kinds of stuff are cemented together by an

external pressure). It seems that only intrinsically structured natural concretions satisfy b), and thus are substances in a strict sense.

It seems, then, that a river can be a quasi-substance although it belongs to the class of *naturalia*, as Hughes points out. In fact, it can be seen as a case of natural aggregation. The case of clouds is more complicated, since Aquinas seems to have two options to choose between. On the one hand, granted that Hughes's worries have been answered, Aquinas could deny that clouds are substances and thus the same reply to the river case would be available. The form of clouds could be seen as a mere accidental form which water may receive. Alternatively, Aquinas could accept that clouds are substances; in this case, water would be the constituent of (the matter₂ of) clouds, by being turned in a particular kind of stuff (the matter₂ of clouds, let us say, cloud-stuff, i.e. water at gaseous state, within a certain range of pressure) when it enters the composition of a cloud. Since the form of the cloud and the form of the cloud-stuff are one and the same, we could say that cloud-stuff does not satisfy *PC* independently from having the substantial form of the cloud, and thus clouds satisfy b). Consequently, when it rains, the cloud-stuff loses its substantial form and is transformed into water; when water evaporates in the right atmospheric conditions, it receives a new form of cloud-stuff, and enters the constitution of new clouds; the new cloud-stuff it constitutes, however, is numerically different from the cloud-stuff it constituted before it rained. If this is so, two clouds existing at different times and made with the same water, are not made of the same the matter₂, and thus, according to (B), they are numerically different just as Aquinas said.

It is interesting to note that Hughes's discussion of Aquinas's theory of matter as a principle of individuation can offer a straightforward defence of it against a recent attack due to E.J. Lowe. According to Lowe,

[Aquinas's] idea is that what makes for the numerical *distinctness* or *diversity* (non-identity) of two different tigers, say, is the numerical distinctness of the matter composing them. But this idea can certainly be challenged, on the simple grounds that individual concrete things like tigers can and do *change* their component matter.⁹³

This objection can be easily met: if it is matter₂ which individuates substances, then we can say that the flesh, bones and skin of a tiger are its matter₂, and they do not change while the tiger exists. It is prime matter which changes, but Aquinas does not claim that prime matter can be the principle of individuation, as we have seen.

Truly, Lowe's objection is not as simple as it may seem. Aquinas's answer cannot satisfy Lowe, since he does not accept the notion of a featureless prime matter in the first place, as we have seen above. So, if a substance changes the matter which it is made of, then that matter cannot be featureless prime matter, but must be some kind of stuff, having some characteristics, i.e. matter₂. Thus, for him, matter cannot be the individuating principle, and, in fact, he argues in favour of the view according to which it is the form a thing which individuates that thing. By form he means the cluster of all the property-tropes which constitute an individual thing.⁹⁴ It is in virtue of having a certain form in this sense that a thing has certain parts and occupies a certain space. It is in virtue of having a certain form in this sense that a tiger has certain particular bones, flesh and skin. It seems to follow that from this standpoint the idea that matter₂ individuates things is a nonsense: if by matter we mean what is opposed to form, matter cannot have a form; matter₂, though, is supposed to have some form or other, unless it is also matter₁, and thus it is part of the form of the thing, it is not its matter.

On this issue, however, Aquinas's views seem to be incompatible with Lowe's, but not inconsistent in themselves. According to Aquinas it is a nonsense to claim

⁹³ Lowe 1998, 226.

that a definition of a thing can pick out its individual form: the individual form is certainly an individuating principle, but it is so since it contains references to the bits of matter₂ which the individual form organises and structures. Forms, at least material forms, with which we are here dealing, are principles organising and structuring matter, as we saw, and they can only exist when they do so; thus, they can only exist in matter. When they are thought of, they are not in matter, but they also fail to be individuals. It is true that Aquinas refers to individual forms, but he does so only by pointing to them, i.e. by mentioning them as 'this man' or 'this statue' (as, for example, in the above quoted passage from *ST*, I, 75, 4). In this way he is consistent in treating individual forms as existing only in matter, namely either as concrete individuals (and then they have "natural" existence), or as current perceptions of concrete individuals (and then they have "intentional" existence):

for some forms of things are not forms without matter, but are "a this in this", i.e. a form in matter, in such a way that what results from the form existing in matter is the species.⁹⁵

When forms of this kind are thought of they are not individuals. According to Aquinas, then, an individual (material) form cannot but exist in matter, and when it is abstracted from matter, like in thought, it fails to be individual, and is universal. In fact, he seems to agree with Aristotle, whom he takes to prove

that animal in general or man in general is not a substance in reality, but that the form animal or man takes on this generality insofar as it exists in the mind, which understands one form as common to many inasmuch as it abstracts it from all individuating principles.⁹⁶

⁹⁴ cf. *ibid.*, 222.

⁹⁵ *ME*, VII, 11, 1517: "Quia quaedam species rerum non sunt formae sine materia; sed sunt *hoc in hoc forsan*, idest formae in materia: ita quod id quod resultat ex forma in materia existente species est."

⁹⁶ *Ibid.*, 13, 1571: "animal commune vel homo communis non est aliqua substantia in rerum natura. Sed hanc communitatem habet forma animalis vel hominis secundum quod est in intellectu, qui unam formam accipit ut multis communem, inquantum abstrahit eam ab omnibus individuantibus."

This thesis about universals allows Aquinas to answer the problem concerning the relationship between primary and secondary substances, which, as mentioned above (§ 1.2), were distinguished by Aristotle in the *Categories*, but not in the *Metaphysics*. The distinction between primary and secondary substances holds on the level of logic, for the reason seen above (cf. § 1.2), but it does not hold on the metaphysical level, since the existing thing is one and the same, although it is considered as an independently existing thing in one case (primary substance), and as an object of thought, i.e. as existing in an intellect, or a mind, in another case (secondary substance):

A logician considers things insofar as they exist in the mind, and therefore he considers substances insofar as they take on the character of universality from the way in which the intellect understands them. Hence in reference to predicating, which is an act of reason, he says that substance is predicated "of a subject", i.e., of a substance subsisting outside the mind. But the first philosopher considers things insofar as they are beings, and therefore in his view of the matter there is no difference between existing in a subject and being predicated of a subject. For he takes something to be predicated of a subject which is something in itself and belongs to some actually existing subject. And it is impossible that this be a substance, for then it would have to exist in a subject. But this is contrary to the notion of substance, as also stated in *Categories*, 2.⁹⁷

This argument leads towards the conclusion that universals are not substances. In making that point, Aquinas explains what the relation between primary and secondary substances are: the former are things existing independently in reality, the latter are those very things thought of, i.e., existing universally in some mind.

⁹⁷ *Ibid.*, 1576: "Logicus autem considerat res secundum quod sunt in ratione; et ideo considerat substantias prout secundum acceptionem intellectus subsunt intentioni universalitatis. Et ideo quantum ad praedicationem, quae est actus rationis, dicit quod praedicatur *de subiecto*, idest de substantia subsistente extra animam. Sed philosophus primus considerat de rebus secundum quod sunt entia; et ideo apud eius considerationem non differt esse in subiecto et de subiecto. Hic enim accipit dici de subiecto, quod est in se aliqua res et inest alicui subiecto existenti in actu. Et hoc impossibile est esse substantiam. Sic enim haberet esse in subiecto. Quod est contra rationem substantiae: quod etiam in praedicamentis est habitum."

Chapter Two

Hylomorphism and the Immateriality of the Human Soul

2.1 The Soul as the Form of a Living Thing.

In chapter one, the discussion of Aquinas's theory of substances was focused on material, or, as he sometimes says, 'corporeal' substances, which, in his view, are things which can be perceived through the senses, i.e. sensible things. A justification for this limitation is that Aquinas's account of ontology follows Aristotle's by starting with an analysis of the material things of which men may have experience: *Physics* is a study of change, in the widest sense, of sensible things, and, as we have seen, it is for the sake of explaining accidental and substantial change within the material world that hylomorphism was developed in books VI to VIII of *Metaphysics*. The Aristotelian approach, however, is not a version of empiricism, since the possibility that non-sensible or even non-material things exist and can be known is not ruled out. In books XI and XII of *Metaphysics*, in fact, Aristotle suggests that in order to account for the existence and the character of material reality, one needs to admit that there are non-material substances, primarily a first uncaused immaterial cause, which play a causal role in relation to material things.

The decision to start from material reality is due mainly to epistemic reasons, i.e. to Aristotle's conviction (numerously expressed by him and subscribed to by Aquinas) that knowledge can be arrived at by starting from an analysis of what is more evident to us, through a search for its (ideally first) causes, which are less

evident to us, but which are nevertheless more explanatory than what is immediately apparent. This search for non-evident first causes leads Aristotle and Aquinas towards the conclusion that there must be immaterial substances:

[There is a] distinction between corporeal and incorporeal substances. Now the former are the most evident to us: for, whatever the latter may be in themselves, they do not impinge on our senses, but are only discoverable by an exercise of reason.¹

According to Aquinas, the human soul, considered by Aristotle in the *De anima*, is the first immaterial substance which has to be admitted, for it is half way between materiality and immateriality. (Whether Aristotle himself shared this view has been a subject of controversy since late antiquity). It is the form of a human body, and, as such, it belongs to the material realm, but it is also capable of activities which are immaterial, as we shall see.²

The *De anima*, according to Aquinas, is still a part of the project which started with the *Physics*, namely the attempt to analyse and account for changes occurring in material substances through hylomorphic explanations. The material substances studied in the *Physics*, in fact, can be divided into natural bodies and artificial bodies, as we have seen in chapter one. Of natural bodies, Aristotle notes in the *De anima*, "some have life and some do not", the former being those which are capable of "self-nourishment, growth and decay."³ About this claim, however, Aquinas suggests that it

is said by way of example rather than definition. For, besides growth and decay, living things may exhibit sensation and intellectual knowledge and other vital activities. Immaterial substances, as is proved in the *Metaphysics*, book XI, have the life of intellect and volition, though they cannot grow and do not

¹ *CDA.*, II, 1, 217: "substantiarum quaedam sunt corpora, quaedam non sunt corpora. Inter quas substantias maxime sunt manifestae corporales substantiae. Nam substantiae incorporeae, quaecumque sint, immanifestae sunt, eo quod sunt a sensibus remotae et sola ratione investigabiles."

² Franks 1995 dwells with the longstanding problem whether Aristotle's theory of the soul has to be located within *Physics* or *Metaphysics*. Her conclusion is that, in Aristotle's framework, "the soul is in a real sense the meeting place of the physical and the metaphysical" (255).

³ Aristotle, *De anima*, II, 1, 412 a 13-4.

take food. But because, in the sphere of things that are born and die, the plant-soul (the principle of nutrition and growth) marks the point where life begins, this soul is here taken as the type of all living things.⁴

Thus, according to Aquinas, growth and decay are just some of the possible cases of vital activities: Aristotle's proposals would have to be taken as mere examples, and he could have listed many more cases than he did. Not only are growth and decay not the only cases of vital activities, but they are not even the activities that a living thing necessarily must have, since they are not part of the "definition" of living things, i.e. they are not essential marks of life. In fact, immaterial substances (like God or angels) are alive, but they do not grow or decay. This choice of examples, however, would have a rationale laying behind it: Aquinas's point seems to be that, although growth and decay are not the mark of life *simpliciter*, they are a mark of a break existing among *material* objects, i.e. between those material things which have life, and thus "are born and die", and those which do not, like stones and mixtures. Aquinas's mention of birth and death, it seems to me, is a sign of his intention to refer to the material world as a domain within which Aristotle's examples of life would constitute a criterion for life. In fact, birth and death *are* the ways in which living corporeal things are generated and corrupted. Generation and corruption, furthermore, are events which are possible within the material realm only.⁵ The relevance of this mark seems to make sense in the context

⁴ CDA, II, 1, 219: "haec explanatio magis est per modum exempli, quam per modum definitionis. Non enim ex hoc solo quod aliquid habet augmentum et decrementum, vivit, sed etiam ex hoc quod sentit et intelligit, et alia opera vitae exercere potest. Unde in substantiis separatis est vita ex hoc quod habent intellectum et voluntatem, ut patet in undecimo metaphysicae, licet non sit in eis augmentum et alimentum. Sed quia in istis generabilibus et corruptibilibus anima, quae est in plantis, ad quam pertinent alimentum et augmentum, ut in fine primi dictum est, principium est vitae, ideo hic quasi exemplariter exposuit *habens vitam*, id quod habet alimentum et augmentum."

⁵ A distinction needs to be made between generation and corruption, and creation and annihilation as modes of coming and ceasing to be. The former concern *possibilia*, the latter *necessaria* (e.g. forms and angles). The distinction between the two modes is due to the fact that *necessaria* cannot be generated or corrupted, since they do not have material parts or organisation. On the distinction between the two modes, see for example ST, I, 45, 1 and 2. On the creation of angels (and immaterial forms in general), see ST, I, 61, 1.

of *De anima*: Aquinas probably takes Aristotle as analysing the material things which compose the physical world, and looking for distinctions and differences which need to be accounted for.

Aquinas goes on, noting that, in more general terms, i.e. in the scope a wider range of reality than material reality, a different criterion of life is available:

life is essentially that by which anything has power to move itself, taking movement in the its wide sense so as to include the 'movement' or activity of the intellect. For we call those things inanimate which are moved only from outside.⁶

Thus, a necessary condition for something to be alive is that the principle of its motion is internal to it, rather than external. 'Movement', Aquinas warns us, has to be taken in a wide sense, so as to include all sorts of change: growth, decay, and movements in space, but also changes in the content of thoughts (i.e., "activity of the intellect"). According to this criterion, plants, animals, but also immaterial substances, like God⁷ and angels, would count as alive, and could be differentiated from all other material things, like stones and mixtures.

This proposal, however, is quite unsatisfactory unless one can explain what it is for a movement to originate from "outside" or from "within." There are, of course, some paradigmatic examples, which may well have grounded Aquinas's intuition: a stone, namely a non-living material object, can move in space, but it needs something outside it (i.e., something which is not that stone or a part of it) to push or

⁶ CDA, II, 1, 219: "Propria autem ratio vitae est ex hoc, quod aliquid est natum movere seipsum, large accipiendo motum, prout etiam intellectualis operatio motus quidam dicitur. Ea enim sine vita esse dicimus, quae ab exteriori tantum principio moveri possunt."

⁷ There is a problem about the application of this criterion in relation to God. Given the claim that God is impassible, He does not undergo change. Aquinas's solution is quite complex, but it might be worth noting that it involves the idea that God's standpoint is outside time, viz. an eternal presence of each instant. From that standpoint, God cannot undergo change, but can think simultaneously about each state of all processes of change which ever occurred or will occur in the universe. Thus, although change cannot be attributed to God, His thinking involves the cognition of change, and the criterion of life – in His case – can be extended accordingly. On God's immutability, also in relation to His vital

attract it; a living material object (for example a dog), instead, can move in space by itself. There are other cases which are less clear, though.

Let us take the example of a plant: we can say that it grows and that growth is a kind of movement; furthermore we can grant that the origin of that movement is within the plant, in the sense that there is nothing pushing or pulling it to make it larger. However, following the same line of reasoning, we could also say that a dry cloth laying in the rain grows when it get soaked with water, even though there is nothing pushing or pulling it. If this is so, it seems that the criterion of life has a counter-example, and it is plausible to think that many more can be found.

A possible reply could be that there is, after all, something which is responsible for the growth of the cloth, and that it is something external, something which is neither the cloth nor a part of it: the water drenching it. In other words, we could say that the cloth is not a living thing, since its growth *has a cause* which is external to the cloth. However, this is a bad reply, and, what is more important in this context, it is not a reply that Aquinas would favour. Considering why that should be so can teach us something about Aquinas's proposal.

First of all, it is a bad reply, since if we introduce a general notion of cause⁸ to account for the origin of motion, all sorts of moving things will result as having several sets of causes, both external and internal, no matter if they are living or non-living things. In our example, we could say that also the plant has external causes which play a role similar to that of the water in the case of the cloth. For example, all the nourishing material that the plant absorbs through its roots. Furthermore, the cloth would itself be moved from within, since it is its physical structure which

activities, see *ST*, I, 9, 1. On God's epistemic standpoint, see *ST*, I, 14, 7. On God's life, involving both His intellectual operations and His immutability, see *ST*, I, 18, 3.

⁸ An analysis of this notion, both in Aquinas and in contemporary terms, will be discussed in chapter 3.

makes it liable to grow when soaked with water, and thus the cloth itself would be a cause of its growing when drenched, and it would have, consequently, an *internal* cause.

Secondly, Aquinas would probably reject this reply, since, in his commentary on Aristotle's *Physics*, he explicitly claims that "that from which a motion originates is a principle of motion, not a cause."⁹ The reason for drawing a distinction between principles of motion and causes has to do with the fact that speaking of a principle introduces the notion of an order of a process, and consequently

by 'principles' we seem to mean moving and acting causes, in which some ordered process can be most clearly found; by 'cause', on the other hand, we seem to mean formal and final causes, from which things mostly depend for their being and the way they are made.¹⁰

A discussion of the different kinds of causes introduced by Aquinas will be presented in the next chapter. At this point, however, Aquinas's claims should seem puzzling. First he seems to say that there are things (i.e. those things from which "a motion originates") which are principles, but not causes; then he seems to say that all principles are causes of some sort, i.e. active causes, rather than final or formal ones. It may be suggested that the second claim is what Aquinas has in his mind. His first claim, in fact, although literally inconsistent with the second, can be charitably interpreted in a way which makes it consistent; but the other way around does not present, at least *prima facie*, a similar possibility. The charitable interpretation takes the first claim to affirm that no principle is a cause *simpliciter*, meaning that principles can only be causes of some particular kind. The second claim, then, would be more specific in pointing out what sort of causes principles are. They are active

⁹ *PE*, I, 1, 5: "Id unde incipit motus est principium motus, non tamen causa."

¹⁰ *Ibid.*: "Per *principia* videtur intelligere causas moventes et agentes, in quibus maxime attenditur ordo processus cuiusdam; per *causas* autem videtur intelligere causas formales et finales, a quibus maxime dependent res secundum suum esse et fieri."

causes, rather than final or formal ones. In the same part of *PE*, Aquinas makes the same point also about material causes, which are not principles, nor causes *simpliciter*, but *elements*.¹¹

If this is correct, when Aquinas says that a thing is alive if the origin of its motion is internal, he must be thinking about a principle, i.e. an active cause, not a formal or final cause, nor the matter which constitutes that thing. Of course this is not to say that causes and principles are opposed to each other like causes and non-causes, but simply that 'principles' refers to a subset of all causes.

This allows some restrictions on suitable candidates as counter-examples of Aquinas's definition of life: the structure of the cloth may be taken as a cause of the cloth, but it would be a formal cause; thus, it cannot count as a principle of its motion, and the claim that there is an external origin of motion loses its support. Similarly, the nourishing substances absorbed by the plant, are not principles, but elements or matter of it. They are not external origins of its motion. Of course, this does not mean that suitable counter-examples cannot be found, but it does show that Aquinas's intuition has some plausibility, and that it is not, *prima facie*, an untenable definition of life.

Aquinas goes on considering the material world, and searches for what the principle of motion of living things may be. He notes that corporeal things which are alive are natural bodies, just as non-living things are. Thus, they also are substances, and since they are physical substances, like all physical substances, they must be compound, i.e. made of form and matter.¹² At this point, he can speculate about what the principle of life of a living thing is:

because to say 'living body' is to imply two things., the body itself and that modification of the body by which it is alive, it cannot be said that the element

¹¹ *Ibid.*

¹² *CDA.*, II, 1, 220.

in the composition referred to by the term body is itself the principle of life or the 'soul.' By 'soul' we understand that by which a living thing is alive; it is understood therefore as existing in a subject, taking 'subject' in a broad sense to include not only those actual things which are subjects of their accidental modifications [i.e., substances], but also bare matter or potential being. On the other hand the body which receives life is more like a subject and a matter than a modification existing in a subject.¹³

In other words, when some being is a living body, it is a body which has the property of being alive. Thus, the property of being alive inheres in that body as in a subject. Inherence is a relation of a property with a subject, i.e. a substratum. It may be a relation between a substance and one of its accidental properties, or between an essential property and the matter of the substance of which it is an essential property. In the case of a living body, life inheres in that body, which is the substratum: thus the body is either a substance or the matter of a substance. In neither case may it be the principle of life, i.e. the soul. (Let us note that in the passage above Aquinas seems to stipulate that the soul is the principle of life).

The soul cannot be the compound thing either, i.e. the living thing: the latter is precisely that whose principle of life we are looking for. And nothing can be the principle of its own motion, according to Aquinas, who follows Aristotle in this respect. Book VIII of *Physics*, and the parallel commentary by Aquinas, in fact, are mainly devoted to showing that no physical substance can move itself, unless there is one "part" moving another. Here 'part' should be taken in a wide sense, so as to include sections which occupy different spatio-temporal locations, elements of mixtures, and hylomorphic components. Thus, the compound living substance cannot move itself, save in the sense that one of its parts moves other parts. Consequently,

¹³ *Ibid.*: "Quia vero, cum dico, corpus habens vitam, duo dico, scilicet quod est corpus et quod est huiusmodi corpus, scilicet habens vitam, non potest dici quod illa pars corporis habentis vitam, quae dicitur corpus, sit anima. Per animam enim intelligimus id, quo habens vitam vivit: unde oportet quod intelligatur sicut aliquid in subiecto existens; ut accipiatur hic large subiectum, non solum prout subiectum dicitur aliquid ens actu, per quem modum accidens dicitur esse in subiecto; sed etiam

the soul cannot be the whole living thing, but one of its parts. But the part in question cannot be a spatio-temporal section (for example an limb or an organ of the body), nor an element mixed in the body, otherwise the above arguments against the idea that matter or compound substances can be principles of life can be restated recursively. Aquinas can then conclude that:

we have no choice but to say that the soul is a substance in the manner of a form that determines or characterises a particular sort of body, i.e., a physical body potentially alive.¹⁴

The soul of a living thing, then, is the form which structures the body, by organising matter into a living thing. The structure and organisation of a body is due to the fact that it is the body of a certain living being, and has grown up accordingly. So the shape of the body is an actuality of the matter which composes that body, and is the result of the living activities which led to the formation of that body; that is, it is a manifestation of the form which is the soul of the living being whose body it is.

A different argument for the same conclusion is suggested elsewhere, by Aquinas. In *Summa theologiae*, for example, he argues that the soul, namely the first principle of life, must be numerically identical to the substantial form of the existing thing, since they both perform the same function. In fact, the substantial form is the principle of organisation which makes a thing be the kind of thing it is, and it is because of being the kind of thing it is that something acts the way it does. On the other hand, it is because of its first principle of life that a living thing acts the way it does. Thus, both the substantial form and the first principle of life perform the function of making a living thing act the way it does.¹⁵ This argument, however,

secundum quod materia prima, quae est ens in potentia, dicitur subiectum. Corpus autem, quod recipit vitam, magis est sicut subiectum et materia quam sicut aliquid in subiecto existens."

¹⁴ *Ibid.*, 221: "relinquitur, per locum a divisione, quod anima sit substantia, sicut forma vel species talis corporis, scilicet corporis physici habentis in potentia vitam."

¹⁵ Cf. *ST*, I, 76, 1.

seems quite problematic, since it rests on the assumption that things which perform the same function must be the numerically identical, and this is dubious. It is conceivable, in fact, that there are several things performing the same function, either as necessary but insufficient concurrent conditions, or as sufficient but unnecessary competing conditions of the performed function.¹⁶

Although this latter argument is intended to directly support the identity between soul and *substantial* form, the previous one does not reach the conclusion that the form which is the soul is a substantial one. In *CDA*, Aquinas puts forward another argument for this conclusion. A living being which loses its soul ceases to exist. What remains, a corpse, is not the living thing which used to exist, nor its matter; rather, it is a new substance, possibly in the weak sense introduced in chapter one, i.e. one whose unity is only constituted by the spatial proximity of the particles which compose it. Furthermore, "since every form has the matter proper to it, the soul must actualise just this special sort of body";¹⁷ not any body can be the body of a certain soul, not even any body of the same species: each form can only actualise its own body, namely the body that it structured through the activities implicit in the process of growth which it originated.

Given the general metaphysical point, discussed in chapter one, according to which no substance can have more than one substantial form, Aquinas concludes that each living thing has an only soul:

there cannot be more than one substantial form in any one thing; the first makes the thing an actual being; and if others are added, they confer only

¹⁶ It may be that case that the articulated defence of this argument which Aquinas proposes could have the resources to make it stronger. However, this argument is not essential for the line of discussion which we are following, and thus we do not need to press it further.

¹⁷ *CDA.*, II, 1, 223: "quia omnis forma est in determinata materia, sequitur quod sit forma talis corporis."

accidental modifications, since they presuppose the subject already in act of being.¹⁸

If a further form is added to a substance and the modifications it causes are not merely accidental, then it is a new *substantial* form, and its action causes the corruption of the substance in which it was brought in, and the generation of a new substance (i.e., it gives being in an unqualified sense, according to the jargon explained in chapter one). Other forms can be super-added to a living being in a way such that it remains the same individual, but they need to be accidental (i.e. to give it being in a qualified sense). At this point, Aristotle's definition of the soul, namely of the principle of life, can be put forward by Aquinas:

The soul is the primary actuality [i.e., form] of a physical body organism. Aristotle does not need to add 'having life potentially', for this is implied in 'organism.'¹⁹

From the fact that in an individual there can only be one soul, an important consequence follows. All vital activities of a living being are movements originating from its soul. Following Aristotle, Aquinas notes that there are five kinds of vital activities, namely of types of change which have an origin within the substance which performs them: intellection, sensation, volition, spatial motion, growth and decay. These activities give origin to a series of four kinds of living beings: intelligent animals (humans); animals capable of moving in space; animals which cannot move in space, but have sensation and volition; plants, which grow and decay only.²⁰ The reference to a series is due to the assumption that a hierarchy exists among the different kinds. Although Aquinas does not explicitly justify that

¹⁸ *Ibid.*, 224: "impossibile est unius rei esse plures formas substantiales; quia prima faceret ens actu simpliciter, et omnes aliae advenirent subiecto iam existenti in actu, unde accidentaliter advenirent subiecto iam existenti in actu."

¹⁹ *Ibid.*, 233: "*anima est actus primus corporis physici organici*. Non autem oportet addere, potentia vitam habentis."

assumption, it is easy to see what his reasons for holding it could be. Firstly, he could recall the claim, that he makes elsewhere,²¹ according to which the four kinds of vital activities have different degrees of nobility or perfection; this, however, would not be very helpful, since it would just move forward the problem of explaining the reason why we think that there is a hierarchy, and prompt the need to explain why there are degrees of nobility. Secondly, he could suggest that the hierarchy is due to the fact that each organism which can perform the activities of some level, can also perform the activities of lower levels, but the opposite is not true. For example, a plant, which is at the first level, cannot think or feel, but a human, who can think and feel, can also grow and decay. This seems an acceptable explanation, and one which Aquinas could give.

Now let us turn to the interesting consequence of the idea that there can only be one substantial form in a substance. The consequence is that the soul of a living thing is the origin of change of all the vital activities which that thing can perform. For example, the human soul is the principle of motion thanks to which a man can think (and thus it is called 'rational soul'), feel, desire, move, nourish himself, and so on. It is the same form which actualises prime matter as a human body: "the rational soul itself is the form whereby the body is a body."²²

The thesis that the soul is the form of the body and that it is also the source of all living activities, including thought, makes it possible to overcome, according to Aquinas, the problem of the relationship between mind and body, which was already an old problem at Aristotle's time. Before Aristotle, in fact, "there had been much uncertainty about the way the soul and the body are conjoined [...] [and] some

²⁰ Cf. *ibid.*, 3, 255.

²¹ Cf. *ST*, I, 77, 4, c.

²² *DS*, 3, s.c. 5: "ipsa anima rationalis est forma in homine, qua corpus est corpus." This relation between prime matter and the form of an animal has already been discussed in chapter 1.

supposed a sort of medium connecting the two together by a sort of bond."²³ Aquinas believes, however, that thanks to Aristotle's theory

there is no more reason to ask whether soul and body together make a unity, than to ask the same about wax and the impression sealed on it, or about any other matter and its form. [...] [Furthermore,] just as the body gets its being from the soul, as from its form, so too it makes a unity with this soul to which it is immediately related.²⁴

In this way, given the metaphysical assumptions concerning the hylomorphic constitution of all material substances, and the identity between soul (or principle of life) and substantial form, Aristotle and Aquinas attempt to overcome Platonic dualism. Like Plato, they take the soul to be responsible for all vital activities, but they claim that its existence and the exercise of its powers are not independent from the body. Even intellectual human thought, which, as we shall see in next section, can become independent from the body, needs the body and the perceptions received by it in order to abstract its universal contents. In *DSC*, Aquinas wrote that "the soul and the body [...] are related to each other as matter is to form, and their union is immediate."²⁵ The soul is the form of the living thing, and the body potentially alive is its matter, but any activity of the body is an activity of the compound, the actual living thing. Although the converse is not true, since, as just mentioned, intellectual human thought may be independent from the body, also several activities of the soul are activities of the compound. Thus, all activities of the body and several activities of the soul are activities of both soul and matter. As a result, the problem of

²³ *CDA*, II, 1, 234: "Fuit enim a multis dubitatum, quomodo ex anima et corpore fieret unum. Et quidam ponebant aliqua media esse, quibus anima corpori uniretur, et quodammodo colligaretur."

²⁴ *Ibid.*: "non oportet quaerere si ex anima et corpore fit unum, sicut nec dubitatur circa ceram et figuram, neque omnino circa aliquam materiam et formam, cuius est materia. [...] Et ideo sicut corpus habet esse per animam, sicut per formam, ita et unitur animae immediate, inquantum anima est forma corporis."

²⁵ *DSC*, 3, ad 10: "Anima autem et corpus [...] comparantur ad invicem ut materia ad formam, quarum unio est immediata."

explaining how an action or a movement of the body can affect the soul, or vice versa, does not even arise, and no connecting medium is needed.

2.2 The Immateriality of the Intellect.

The claim that the soul is tied to the body as its form does not entail that humans are just material beings. As we have seen, the analysis of natural (i.e., physical) reality, carried on by Aristotle in his *Physics*, leads him to the conviction that some physical beings are alive, and that among living things some are capable of more and more elevated vital activities than the other. Humans turn out to be the highest examples of natural living things, since they are capable of all vital activities, including thinking. Like other living natural things, humans can nourish themselves, grow, decay, have sensations and desires, and move in space. But thinking is something peculiar to them, among material beings.

According to Aquinas, furthermore, thinking is a vital activity, which is unlike all the others. In a sense to be specified, thinking is independent from the body, and, thus, it is incorporeal, i.e. immaterial. In this way, humans turn out to be very special physical entities; they are physical - in the Aristotelian sense discussed in the previous section -, but not *merely* physical, since they are capable of activities which transcend physicality. It is not plainly clear that, in drawing these conclusions, Aquinas was an Aristotelian, although he probably thought that Aristotle would have agreed with him. In fact, Aristotle certainly believed that the physical world does not exhaust the whole of reality, since in *Metaphysics* XII, he explicitly admitted the existence of a transcendent first cause, capable of thinking, which is a pure act, i.e.

not composed of matter. What is unclear, as is well known, is at what point of the philosophical search he thought that non-physical entities had to be introduced. In Aquinas's view, human beings are a borderline case, since they are still part of physical reality, but are also non-physical since they are capable of thought and self-reflection. It is contentious that this was Aristotle's position in his *De anima*. Since antiquity, in fact, several commentators claimed otherwise. In Aquinas's own times, in particular, the views of Arab commentators clearly incompatible with Aquinas's interpretation were quite widespread. At the University of Paris, for example, during Aquinas's period of teaching there, the views of Averroes were strongly defended by Siger of Brabant. According to Averroes, the actual thinking is not a vital activity of the single individual, but an activity of the active intellect, a single non-physical transcendent entity, shared by all individual men. It is against such views that Aquinas wrote *De unitate intellectus contra Averroistas*.

The problem now arises of understanding how it is possible that a material form, i.e. a form of something material, as explained and analysed in chapter one, can be credited with activities which are independent from a body. In particular, Aquinas seems to need to do at least two things: to show that thinking must be an activity of something immaterial, and to show that the individual human soul can be the soul of a living man and a subsistent being, i.e. a substance, at the same time. We will deal with these problems in turn.

Before entering into Aquinas's arguments for the immateriality of the intellect, however, three preliminaries concerning his conception of the intellect are needed.

First of all, following Aristotle, Aquinas believed that all sentient beings are aware of the environment around them because they are in contact with the world outside them and end up "containing" it in themselves. Thus, "the soul is in a way all

existing things."²⁶ However, there are different ways in which the world can be "contained" in a soul, and among all of them a major distinction has to be considered. On the one hand, a soul can be acquainted with a particular individual, through *perception* (e.g., when one sees a table), through *memory* (e.g., when one recalls perceiving a particular table, after closing her eyes while standing in front of it, by picturing in herself an experience as close as possible to the one she was undergoing when her eyes were open), or through *imagination* (when one pictures in himself a particular table, although he has never actually experienced it). On the other hand, a soul may entertain thoughts which do not concern any particular individual, but classes of things; for example one may think that tables are a great invention, or that tables are more useful than statues.

One might suppose that such a distinction makes the explanation of singular thoughts difficult (e.g., the thought that the only table in my bedroom is useful): thoughts of that sort refer to singular individuals, but they employ concepts which are universal, and thus cannot secure a one-to-one correspondence with the relevant referents. However, Aquinas has the resources to answer this worry: a singular thought can be about a particular individual, because it represents it through the exercise of relevant conceptual abilities (e.g., the abilities to master the concepts *bedroom*, *my*, *table*, *only*, *useful*, etc.), which ground the capacity to manage the focus of attention on imagined possible experiences or memories of actual past experiences; these, on the other hand, are individuals and can be in appropriate one-to-one relationships with the referents. In this way, an individual object may be represented non-pictorially, by sorting it out with an individuating list of characteristics, which require the mastering of conceptual abilities (i.e., universals)

²⁶ *De anima*, 431 b 22.

and the reference to the conditions in which the subject had or could have relevant experiences.²⁷

The second preliminary concerns Aquinas's distinction between two different operations of the intellect, the capacity to comprehend universal forms (*intelligentia indivisibilium*), e.g. to master the concepts under which things fall, and the capacity to form propositions, both affirmative (*compositio*) and negative (*negatio*):

the intellect, by one of its activities, understands things simply; understanding, for instance, man or ox, or any such thing, simply in itself. And this operation involves no falsehood, both because objects considered simply in themselves are neither true nor false, and also because, as we shall see later on, the mind is infallible with respect to what things are in themselves. On the other hand, where truth and falsehood are found in the intelligible objects themselves, there must have been already a certain composition of objects, i.e., of things understood, joining several such objects together.²⁸

These remarks may seem very odd to a modern reader, but I hope that they can be made to seem more plausible. The main difference between the two operations seems to be that the former cannot go wrong, where the latter can. The latter is the capacity of judgements and it is easy to see why it can go wrong: if one judges that a certain object has a certain property, for example, the judgement will be true if that object really has that property, and it will be false otherwise. It seems harder to see why the apprehension of essences, i.e. universal forms, cannot go wrong. A reason could be that truth and falsehood "consist in a certain adequation of or comparison of one thing to another, as when the mind combines or distinguishes; but not in the

²⁷ For an analysis of Aquinas's theory of singular thoughts, see Haldane 1989, 17-26. Aquinas deals with the problem in *ST*, 86, 1.

²⁸ *CDA*, III, 11, 746-7: "una operationum intellectus est, secundum quod intelligit indivisibilia, puta cum intelligit hominem aut bovem, aut aliquid huiusmodi incomplexorum. Et haec intelligentia est in his circa quae non est falsum: tum quia incomplexa non sunt vera neque falsa, tum quia intellectus non decipitur in eo quod quid est, ut infra dicetur. Sed in illis intelligibilibus, in quibus est verum et falsum, est iam quaedam compositio intellectuum, idest rerum intellectarum: sicut quando ex multis fit aliquid unum."

intelligible object taken in itself."²⁹ Although the idea that concept formation cannot go wrong may seem puzzling (an explanation of it will have to wait till chapter five), the distinction between the two faculties seems acceptable.³⁰

The third and last preliminary is about Aquinas's idea that thinking consists in the intellect becoming formally identical to the thought object, i.e., in his words, in receiving the *intelligible form* of the object, that is the form of the object abstracted from matter, and thus made universal, in the way mentioned at the end of chapter one. John Haldane has pointed out in several essays³¹ that the claim that the intellect becomes formally identical to the object, does not entail that Aquinas thinks of mental representations as internal objects; rather, mental representations are acts of a mind, which acts according to its structure, and is structured according to the reality which it cognises and can think of. Possessing a concept is having a certain habit (*habitus*) of thought, i.e. being used to forming thoughts in a certain way. In Aquinas's own words, with Haldane's interpolations:

It is because the intelligible species [the concept *F*] which is the form of the intellect and the principle of thought is the formal likeness of the external object [the property *Fness*] that the intellect, consequently, forms the *intentio* [namely a thought] of the object: since as a certain thing is, such is the effect of its operation. And since thought is like a particular thing, it follows that the intellect thinks about that thing by forming that thought.³²

Although this may suffice for what follows, these views will be discussed in chapter five.

²⁹ *Ibid.*, 760: "Veritas enim et falsitas consistit in quadam adaequatione vel comparatione unius ad alterum, quae quidem est in compositione vel divisione intellectus. Non autem in intelligibili incomplexo."

³⁰ The distinction is explained in Kenny 1993, 47-9; a criticism of the idea that the intellect cannot go wrong is in Jenkins 1991. I have discussed the issue in De Anna 2001, Ch. 4. On the capacities of the intellect see also Haldane 1992a.

³¹ Cf., for example, Haldane 1989a, Haldane 1992b and Haldane 1993b.

³² *SCG*, I, 53: "Per hoc enim quod species intelligibilis quae est forma intellectus et intelligendi principium, est similitudo rei exterioris, sequitur quod intellectus intentionem formet illi rei similem: quia quale est unumquodque, talia operatur. Et ex hoc quod intentio intellecta est similis alicui rei, sequitur quod intellectus, formando huiusmodi intentionem, rem illam intelligat."

Now let us go back to Aquinas's arguments for the thesis that thinking must be an activity of an immaterial subject. Some are taken from Aristotle, and some are not found in Aristotle, although they rest on Aristotelian premises. David Foster (1991a and 1991b) grouped all these arguments in five types, and offered an assessment for each of these.

Arguments of *type one*, are akin to the following. "The intellect is in potency to become all corporeal things. To be in potency, the intellect must not be that to which it is potential. Therefore, the intellect must be free of all corporeal things."³³ The first premise rests on the assumption of the theory of mental representation according to which thinking is becoming identical to the object of thought, which was mentioned few paragraphs above. In other words, thinking is an act of the intellect, which it can perform in virtue of having previously being structured by the forms of things which it abstracted from individuals existing in reality. The second premise depends on the notions of potentiality and actuality which were introduced in chapter one. Arguments of this sort, Foster notes, are very common in Aquinas's writings, especially at the beginning and at the end of his career, i.e. in the *Commentary on the Sentences*, the *Questiones disputatae de anima*, and in the *Summa theologiae*.³⁴

According to Foster, arguments of this sort are open to at least four objections.³⁵ It seems to me, however, that only one, the first, is truly significant. This first objection is that the argument equivocates different senses of 'potentiality.' As we have seen in chapter one, according Aquinas all material things are the result of the actualisation of some potentialities contained in a substratum (matter), according to a certain principle of organisation (form). The intellect, on the other hand, is taken to receive potentially the natures of all material things - in the sense

³³ Foster, 1991b, 236-7.

³⁴ CSE, II, 19, 1, 1; ST, I, 75, 2; QDA, 2; CT, I, 7.

that it can receive the forms which structure material things through a process of abstraction -, but it is not potentially such in the same sense in which matter is potentially all things. When the intellect receives the form of a thing, it does not literally become that thing, but it contains the form of that thing in a special manner, i.e. intentionally. But there is no reason, at least *prima facie*, to deny that some material thing which has some substantial form *naturally* can have the forms of all material things *intentionally*. Thus, Aquinas's argument equivocates the two senses of 'potentially', i.e. the natural and the intentional. This objection seems quite effective.

The second objection³⁶ is that while it is true that the intellect can cognise all material things, this cannot provide a case for its immateriality, since the internal sense (i.e., the faculty which, according to Aquinas, collects and unifies the data arriving from the different sense modalities) can also cognise all material things, although it is a faculty of a material organ. Indeed, Aquinas thinks that all types of sensory cognition - including perception, imagination and memory - consist in the reception of the forms of things in sense organs. Also the internal sense, which receives all sensible forms through all sense modalities, is the act of a sense organ, apt to receive all types of forms. Foster's claim, then, is that the internal sense can receive the sensible forms of all material things and, thus, it is a counter-example of Aquinas's contention that only immaterial things have that capacity. To this, however, Aquinas could reply that it is not true that the internal sense can cognise all material things. In fact, it cannot perceive itself, although it is a material body, whereas the intellect can cognise it (the internal sense) by inferring its existence from considerations concerning the functioning of the different sense modalities. The

³⁵ Cf. Foster 1991a, 426-38.

³⁶ Foster 1991a, 431-4.

point, here, is not that the internal sense lacks reflexive cognition, whereas the intellect has it, but that Foster's assumption that the internal sense can cognise all material things is false (in fact, it cannot cognise itself, although, it is material), and, thus, the capacity of cognising all material things could be rightly taken as the mark of immateriality, as Aquinas does take it.

According to the third objection,³⁷ the findings of recent neurophysiology, such as discoveries about what cognitive functions different parts of the brain perform, would be consistent with the view that there is an internal sense working as Aquinas supposes; thus, the doctrine of the internal sense would be well supported and its clash with arguments of type one would be even stronger than the second objection supposes. However, given the failure of the second objection, the third does not stand: no matter how closely the findings of neurophysiology resemble the working of the internal sense, intellect and internal sense have different capacities (i.e., the former can cognise the internal sense, the latter cannot), contrary to what the second and the third objections suppose.

The fourth objection³⁸ says that an argument of type one severs Aquinas's unity of soul and body, since it "minimizes the role of the interior senses" (437). It is not clear, though, why this argument would minimise "the role of the interior senses." Perhaps, the reason is that it would overlook the thesis that also the interior senses can cognise all things, as Foster suggests in raising the second objection. If this is the reason, the objection fails, since, as we saw, it is false that the internal sense can cognise all things; the internal sense cannot perceive itself.

Let us now turn to arguments of *type two*. These claim that "whatever is received is received according to the mode of the receiver. The intellect receives

³⁷ Foster 1991a, 434-6.

³⁸ Foster 1991a, 436-7.

what it knows in an absolutely³⁹ immaterial mode. Therefore, the mode of being of the intellect is immaterial."⁴⁰ The first premise is a general point about the reception of forms: we have seen that a form ("whatever is received") is a principle structuring a suitably disposed matter ("the receiver"). There are different ways in which things may be suited to receive the same form, but that form will give different organising results depending on what sort of matter receives it. The second premise is justifiable through the assumption of the above mentioned theory according to which thinking consists in grasping universals. Foster notes that, although arguments of type one are present in the most prominent locations, arguments of type two are the most pervasive in Aquinas's writings,⁴¹ and are still the most considered by twentieth century Thomists. Foster (both 1991a and b) takes this argument to be cogent and indeed it seems quite strong. Aquinas's success in supporting the immateriality of the soul will ultimately rest on its fortune. Nonetheless, it has recently received some deep and precise criticisms. Before turning to these, however, let us look at the rest of Aquinas's arguments listed by Foster, which, I will claim, are not cogent.

Type three arguments can hardly be said to constitute a kind, but there are a number of cases which have a structure similar to that of the following:

no body can receive the substantial form of another body, unless by corruption it loses its own form. But the intellect is not corrupted; rather it is perfected by receiving the forms of all bodies; for it is perfected by understanding, and it understands by having in itself the forms of the things understood. Hence, no intellectual substance is in a body.⁴²

³⁹ Foster's reference to an absolute mode of immateriality has to do with Aquinas's claim that materiality and immateriality are matter of degrees. De Anna (2000b) offers a discussion of this thesis by Aquinas, which can be thus recapitulated: "Aquinas speaks about a hierarchy of forms with respect to the complexity of the functions that things having those forms may display. [...] for a form f , the more complex f is, the more complex the matter₂ [secondary matter] which is apt to receive f is, but the more complex matter₂ is, the further away f is from prime matter. In other words, the more immaterial f is." A form is "absolutely immaterial", then, if it can exist without structuring matter.

⁴⁰ Foster 1991b, 238.

⁴¹ *ST*, I, 75, 5; *QDA*, 14; *CT*, I, 7.

⁴² *SCG*, II, 49, 3: "Nullum corpus potest alterius corporis formam substantialem recipere nisi per corruptionem suam formam amittat. Intellectus autem non corrumpitur, sed magis perficitur per hoc quod recipit formas omnium corporum: perficitur enim in intelligendo; intelligit autem secundum

A common feature of these arguments is that they rest on Aristotle's principle according to which the intellect cannot become all natural things, and show that this clashes with some physical principle, so that the intellect cannot belong to the realm of physics. Although all the premises are Aristotelian, Aristotle himself did not advance arguments of this sort. Strangely, these arguments are found extensively and exclusively in the *Summa contra Gentiles*, where no other type is present; this is a peculiar detail, which is thus explained by Forster:

type 3 [...] can be multiplied by varying the minor premise. The *Summa contra Gentiles* is characterised by multiple arguments for each point hence, the attraction of using a type of argument which lends itself to variations.⁴³

Arguments of this sort, Foster notes, are very weak nowadays, since each of them rests on a premise taken from physics, i.e. old "bygone physics." This criticism is true only on the assumption that we take the principles of Aristotle's *Physics* to be scientific principles in the modern sense. If, instead, we follow the line taken above, in chapter one, and hold that they are metaphysical preconditions for the existence of a physical world, whatever the latter may be made of, it may be the case that arguments of this sort have still something to say. However, the argument seems to have another, fatal problem. As was mentioned in chapter one, and will be discussed in detail in chapter five, Aquinas maintained that the form existing as the structuring principle of an actual being has natural existence, whereas when perceived or thought of, it has a different kind of existence, i.e. intentional existence. Unless further qualifications are added to type three arguments, and it is hard to see what these may be, it could be objected that the claim that the intellect could not receive substantial

quod habet in se formas intellectuum. Nulla igitur substantia intellectualis est corpus." Translation quoted from Foster (1991b, 238).

⁴³ Foster 1991b, 240.

forms of other things without losing its own nature, i.e. without being corrupted, would only be true if it were supposed to receive those substantial forms *naturally*. We have no reason to think that this has to hold also for the reception of substantial forms intentionally.

Arguments of *type four* concern self-consciousness, i.e. the capacity of the intellect of knowing itself, a capacity that, it is claimed, no material thing could have:

The action of no body is self-reflective. For it is proved in the *Physics* that no body is moved by itself except with respect to a part, so that one part of it is the mover and the other the moved. But in acting the intellect reflects on itself, not only as to a part, but as the whole of itself. Therefore, it is not a body.⁴⁴

The "acting" of the intellect is the manner of representation used by the intellect, which was mentioned in the third preliminary above. The conclusion cannot be extended to sense modalities, since the senses cannot perceive themselves directly, whereas the intellect can. An eye, for example, cannot see itself directly, but only in a mirror, whereas the intellect can think about itself. This argument - which is of neo-Platonist origin - appears only in the writings of the early and middle periods of Aquinas's production, namely in the *Commentary on the sentences*, and in *Summa contra Gentiles*. It is similar to the third type, in assuming a premise from physics, but it relies on the capacity of self-knowledge, rather than on the capacity of knowing everything else. The argument uses Aristotelian premises, but is only found in Plotinus, in Avicenna, and in Albert the Great, before Aquinas.⁴⁵

Foster believes that this argument is one of the strongest, but it can be objected that the premise according to which the intellect "reflects on itself, not only as to a

⁴⁴ SCG, II, 49, 8: "Nullius corporis actio reflectitur super agentem: ostensum est enim in physicis quod nullum corpus a seipso movetur nisi secundum partem, ita scilicet quod una pars eius sit movens et alia mota. Intellectus autem supra seipsum agendo reflectitur: intelligit enim seipsum non solum secundum partem, sed secundum totum. Non est igitur corpus." Translation quoted from Foster 1991b, 240.

⁴⁵ Cf. Foster 1991b, 241.

part, but as the whole of itself" is unwarranted. In fact, it could be the case that in self-reflection there is a part of the intellect which thinks about the other parts of the intellect, but which cannot be thought of by other parts. Such a part would be our highest cognitive faculty, and thus it would be out of the reach of our cognitive powers, and it would necessarily pass unnoticed.⁴⁶ Given the premises about self-motion taken from physics, self-reflection ends up being a reason to introduce such an unnoticeable part of the intellect, unless a previous reason for thinking that the intellect is immaterial, and thus can violate a law of physics, is granted. Yet, granting such a reason would make arguments of type 4 question-begging.⁴⁷

Type five is a group of arguments starting from the fact that the intellect can contain contraries:

the forms of contraries as they exist in matter, are contrary; hence, they exclude one another. But as they exist in the intellect the forms of contraries are not contrary; rather, one contrary is the intelligible ground of another, since one is understood through another. They have, then, no material being in the intellect. Therefore, the intellect is not composed of matter and form.⁴⁸

This argument also uses premises from Aristotle, but was not developed by him. Aquinas, however, does not seem to have been the first to use it, and its history can be probably traced back to Alexander of Aphrodisias.⁴⁹

⁴⁶ This objection could be overcome if a follower of Aquinas is keen to claim that a distinction between self-reflexivity and other directed second order thought has to be made. If self-knowledge is subject-reflective, it cannot be accounted for in terms of cognition of an object - be it an internal or an external one. This line of defence, though, is available only if one can argue that self-knowledge needs to be accounted for in terms of reflexivity. Although this is an open possibility, and thus there could be more to Aquinas's argument than I allow, I do not intend to peruse this line of defence here, since it would require an extended and articulated analysis of self-knowledge.

⁴⁷ Haldane (2003b) notes that there are versions of this argument which are better than Aquinas's, in that they preclude the possibility of dealing with reflexivity as second order consciousness. For example, Haldane quotes Plotinus (*Enneads*, IV, 7, 1-3), who denies that the soul may be made of parts, and thus one cannot claim that one part could know the rest.

⁴⁸ SCG, II, 50, 7: "Formae contrariorum, secundum esse quod habent in materia, sunt contrariae: unde et se invicem expellunt. Secundum autem quod sunt in intellectu, non sunt contrariae: sed unum contrariorum est ratio intelligibilis alterius, quia unum per aliud cognoscitur. Non igitur habent esse materiale in intellectu. Ergo intellectus non est compositus ex materia et forma." Translation from Foster 1991b.

⁴⁹ Cf. Rahman 1952, 6, mentioned in Foster 1991b, 241.

It seems to me that this kind of argument is open to two strong objections, at least. Firstly, it is vulnerable to the same objection put forward against type three. Although we grant that "forms of contraries as they exist in matter are contrary", it cannot be *prima facie* excluded that they are contrary when existing intentionally as intelligible forms. Secondly, it is disputable that contrary forms can coexist in the intellect, for one cannot entertain at the same time two "contrary" thoughts. Indeed, someone could claim that even a typical example, such as the thought 'x is hot and cold', does not show the simultaneous deployment of contrary concepts, since its entertainment is an event extended throughout a certain lap of time. The instant at which the concept *hot* is entertained, thus, could be different from the instants at which the concept *cold* is entertained. Of course, at a certain instant, one may master concepts suitable to produce "contrary" thoughts, but in this sense the intelligible forms (the concepts) would exist in the intellect only as dispositions, or capacities, or habits (*habiti*), and the intellect would only be actualised by some consistent set of them at each time.

One could reply that the point of Aquinas's argument concerns the content of a thought, whereas the second objection insists on the articulation of a thought as it is entertained or expressed. However, it seems to me that, given Aquinas's account of the content of thought as an act of the intellect informed by an intelligible species, the distinction between the content of a thought and its articulation cannot be relevant. From Aquinas's perspective, the content of a thought is certainly determined by the actualisation of the intellect by a certain form. On the other hand, it seems to me that, *prima facie*, there is no other way of explaining the articulation of an act of thinking, other than recalling the succession of forms which actualise the intellect throughout. If that is the case, the content of a thought and its articulation

when it is entertained are determined by the same event: a certain succession of forms actualising the intellect. Since Aquinas's argument concerns the content of thought in that it involves the actualisation of certain forms in the intellect, what he says concerns the articulation of that thought just as well.⁵⁰

If all this is right, we can conclude that the only chances for Aquinas to sustain the thesis that the intellect is immaterial rest on the second argument, which, as I have mentioned above, has recently been the subject of strong criticism. I now turn to this.

The criticism consists in the claim that arguments of the second type are fallacious. According to this view, Aquinas commits what Robert Pasnau (1998) has termed the 'content fallacy', a criticism previously presented, as Pasnau recognises, by Joseph Novak (1987). Pasnau notes that the fallacy is well-known and quite widespread in the philosophy of mind.⁵¹ It is the "mistake in reasoning that comes from conflating two kinds of facts: facts about the contents of our thoughts, and facts about what shape or form our thoughts take in our mind."⁵² An argument fallacious in this sense "falsely supposes a correspondence between what someone is thinking about and the intrinsic, non-intentional qualities of that thought."⁵³ For example one may conclude that Bob's thought is red, since Bob is thinking about a red sports car. Pasnau notes that the fallacy may appear as an inference "from the intrinsic, non intentional qualities of our thoughts to their intentional qualities" or the other way around. "An argument in either direction may be an instance of the content fallacy."⁵⁴

⁵⁰ Aquinas's argument could be defended if one denies that thinking involves the entertainment of concepts through time. Haldane (2003), for example, suggests that only sensations and imagery are temporally extended, and that thinking does not always require them. The issue was also discussed by Peter Geach (1969). By contrast, the claim that thinking is necessarily extended in time was supported by Claudio Costa (2001).

⁵¹ He mentions the analysis of the fallacy due to Zenon Pylyshyn (1981).

⁵² Pasnau 1998, 293.

⁵³ *Ibid.*

⁵⁴ *Ibid.*, 294.

Thus, one can fallaciously claim that Bob's thought was red since he was thinking about a red sports car, *and* that the sports car he was thinking about was represented as being fast because the thought about it which he entertained was quick.

Although it is hard to believe that anyone would be likely to make these inferences, the fallacy may take extremely subtle forms, as it happens, according to Pasnau, in an astonishing number of places in Aquinas's writings. Indeed, Pasnau suggests that Aquinas very often falls victim of the content fallacy. A common case would be the following

intellectual thought is immaterial

intellectual thought is of things that are immaterial,

which Aquinas would tacitly accept in all the several occasions in which he attempts to show that universals are immaterial. The cases considered by Pasnau proceed in the opposite direction to the arguments for the immateriality of the intellect. The former assume the immateriality of the intellect to show that universals are immaterial, while the latter start from the immateriality of universals to conclude that the intellect is immaterial. The presence of both kinds of arguments in Aquinas does not *prima facie* entail that he was trapped in a vicious circle. The distinction between what is prior for us and what is prior in nature may be useful again in this context. The fact that there are universals and the fact that universals cannot be material, are prior for us (i.e., they are truths about the content of cognition and about metaphysics, respectively); by assuming statements about those facts, furthermore, we can reach the conclusion that the intellect is immaterial, which is not a prior truth for us. This is precisely what type two arguments do. On the other hand, the fact that the intellect is immaterial, which is prior in nature, i.e. more explanatory, is what

explains the fact that universals are immaterial. Aristotle's distinction between dialectic, the kind of knowledge described in the *Topics*, and science, as presented in *Posterior Analytics*, is at work here. In both cases, however, inferences can be constructed, even if the epistemic status of the premises is different in the two cases. I will argue below that, even if the cases considered by Pasnau concern the naturally prior version of the inference, his point may be extended also to the opposite case, consistently with his claim about the dual character or direction of the fallacy.

Pasnau finds a clear example of the content fallacy in Aquinas's commentary on the *De anima*:

While the sense-faculty is always the function of a bodily organ, intellect is an immaterial power—it is not the actuality of any bodily organ. Now everything received is received in the mode of the recipient. If then all knowledge implies that the thing known is somehow present in the knower (present by its similitude), the knower's actuality as such being the actuality of the thing known, it follows that the sense faculty receives a similitude of the thing sensed in a bodily and material way, whilst the intellect receives a similitude of the thing understood in an immaterial and incorporeal way. Now in material and corporeal beings the common nature derives its individuation from matter existing within specified dimensions, whereas the universal comes into being by abstraction from such matter and all the individuating material conditions. Clearly, then, a thing's similitude as received in sensation represents the thing as an individual; as received, however, by the intellect it represents the thing in terms of an universal nature. That is why individuals are known by the sense, and universals (of which are the sciences) by the intellect.⁵⁵

This passage would hide, in Pasnau's view, an instance of the content fallacy, as it would be clear from the fact that its premises are about non-intentional, or

⁵⁵ CDA, II, 12, 377: "sensus est virtus in organo corporali; intellectus vero est virtus immaterialis, quae non est actus alicuius organi corporalis. Unumquodque autem recipitur in aliquo per modum sui. Cognitio autem omnis fit per hoc, quod cognitum est aliquo modo in cognoscente, scilicet secundum similitudinem. Nam cognoscens in actu, est ipsum cognitum in actu. Oportet igitur quod sensus corporaliter et materialiter recipiat similitudinem rei quae sentitur. Intellectus autem recipit similitudinem eius quod intelligitur, incorporaliter et immaterialiter. Individuatio autem naturae communis in rebus corporalibus et materialibus, est ex materia corporali, sub determinatis dimensionibus contenta: universale autem est per abstractionem ab huiusmodi materia, et materialibus conditionibus individuantibus. Manifestum est igitur, quod similitudo rei recepta in sensu repraesentat rem secundum quod est singularis; recepta autem in intellectu, repraesentat rem secundum rationem universalis naturae: et inde est, quod sensus cognoscit singularia, intellectus vero universalia, et horum sunt scientiae."

intrinsic, in Pasnau's terminology, qualities of our cognitive faculties (a "sense-faculty is always the function of a bodily organ", and an "intellect is an immaterial power"), but its conclusion concerns the intentional or representational features of our perceptions and thoughts.⁵⁶ Pasnau offers a detailed analysis of the argument (let us call it the 'A-argument'), and claims that it is plausible, but only up to a certain point:

A1. the senses are powers of corporeal organs (premise)

A2. the intellect is immaterial (premise)

A3. everything received in something corporeal is received corporeally and
everything received in something incorporeal is received incorporeally
(premise)

A4. cognition is the reception of the form (likeness) of the cognised object
(premise)

A5. the senses must receive a likeness corporeally (from A1, A3, A4).

A6. the intellect must receive a likeness incorporeally (from A2, A3, A4).

A7. "in material and corporeal beings the common nature derives its
individuation from matter existing within specified dimensions"
(premise).

A8. "the universal comes into being by abstraction from [...] matter and all the
individuating material conditions" (premise).

At this point, two conclusions are expected to follow by Aquinas:

A9 a thing's similitude (likeness) as received in sensation represents the thing
as an individual (from A5 and A7)

⁵⁶ Pasnau 1998, 295.

A10 a thing's similitude (likeness) as received by the intellect represents the thing in terms of an universal nature (from A6 and A8)

From A9 and A10 the conclusion that "individuals are known by the senses, and universals by the intellect" certainly follows, but according to Pasnau, the inferences to A9 and A10 are problematic.

In Pasnau's view, Aquinas would suppose A9 to follow from A5 and A7, and A10 to follow from A6 and A8. This, though, would be wrong. What follows from A5 and A7 is

A9*. a thing's likeness, as received in sensation, is individual ("singular")

A9 concerns the intentional features of the received likeness, whereas A9* is about its intrinsic character. Since all the premises regarded the intrinsic character, the inference of A9 is fallacious and only A9* really follows. But, "why couldn't a physical likeness represent a universal?"⁵⁷

Conclusion A10 is in no better position. It is meant to follow from A6 and A8, but A8 is problematic. A7 seems to contrast with A8, but they are more compatible than it could seem. A7 states that being in matter is a sufficient condition for being individual, although it is not necessary (angels and God, who are immaterial, are individual nonetheless). A8, on the other hand, refers to a mental operation (abstraction) through which some of the aspects of a thing are considered "while bracketing the rest."⁵⁸ Thus, A8 concerns an intentional feature of the likeness which it mentions, and is indifferent to the aspect touched upon by A7, i.e. materiality and individuality. Consequently, A10 does not follow, since, as far as A8 is concerned,

⁵⁷ *Ibid.*, 299.

⁵⁸ *Ibid.*

"it seems perfectly possible that something material might, through the act of abstraction, understand universals."⁵⁹ Again, the problem with the inference has to do with the content fallacy: A8 is about intentional content but it is then used to reach conclusions about the intrinsic nature of representations.

Pasnau considers a possible reply. One could suspect that A3 and A5 could be given an intentional reading and be interpreted like

A5#. the senses must receive a likeness representing the thing being sensed as corporeal (from A1, A3, A4).

A6#. intellect receives a likeness representing what it understands as incorporeal and immaterial (from A2, A3, A4).

Now, it seems that A10 follows from A6# and A8, and A9 from A5# and A7. Unfortunately, Pasnau notes, the problem now is just moved up to the inferences to A5# and A6#. These seem to be plausible only at the cost of reinterpreting A3 as

A3#. every representation received in a material cognitive power represents the world as material; every representation received in an immaterial cognitive power represents the world as immaterial

The trouble here is that A3 was a quite harmless metaphysical claim, whereas A3# seems unsupported and question begging.⁶⁰

An alternative way out for Aquinas would be to offer a bridge between the intrinsic and the intentional, i.e. an explanation of the relation between intrinsic and intentional features of representations, to the effect that A5# and A6# can be derived from A5 and A6. Unfortunately again, Pasnau notes, Aquinas is hostile to such bridges, since he holds the view that the likeness existing in the cognisant is similar

⁵⁹ *Ibid.*

⁶⁰ *Ibid.*, 300-1.

to the thing cognised, but not literally so.⁶¹ He famously claimed, for example, that the eye receives the form of the object without becoming coloured.⁶² Why should a representation of something physical (i.e., a particular), then, become literally physical, or the representation of something immaterial (i.e., a universal) become literally immaterial?⁶³ Pasnau concludes that the argument does not stand as it is and it could only follow if some further suitable premise is added. However, Pasnau's point does not undermine the general character of Aquinas's possible move, for some other suitable kind of bridge could be proposed nonetheless.

Another way of bridging the gap was indeed suggested by Aquinas, according to Pasnau, by arguing in favour of a claim which could become a suitable premise to vindicate the argument. In *Questiones de veritate*, he wrote:

Species received by the senses are similar to objects only in respect to the object's being able to act - that is, in respect to form. Hence singulars cannot be cognized through them, unless perhaps insofar as they are received in another power that uses a corporeal organ, in which they are received in a way as material, and so as particular.

In intellect, however, which is altogether devoid of matter, [a species] can be a source only of universal cognition, unless perhaps through a kind of reflection to phantasms.⁶⁴

Here a capacity of an object to act is taken to be a dispositional property that it has in virtue of its form. Such is the case also for perceptual properties: they are capacities to act on the senses. On the other hand, the experiences of objects having the same form may be indistinguishable. Consequently, Aquinas claims, singulars, as such, cannot be known (cognised) through their forms (species) received in the

⁶¹ Cf. *QDV* 2, 3, ad 9.

⁶² Cf., for example, *ST*, 1, 78, 3 c.

⁶³ Pasnau 1998, 301.

⁶⁴ *QDV*, 19, 2 c: "Species autem quae sunt acceptae a sensibus, sunt similes rebus secundum hoc tantum quod res agere possunt; hoc est secundum formam. Et ideo per eas non possunt singularia cognosci, nisi forte in quantum recipiuntur in aliqua potentia utente organo corporali, in qua quodammodo materialiter et sic particulariter recipiuntur. In intellectu vero, qui est omnino a materia immunis, non possunt esse principium nisi universalis cognitionis, nisi forte per quamdam reflexionem ad phantasmata, a quibus intelligibiles species abstrahuntur."

senses, i.e. through the content of experience, unless there is some way in which a species received in a sense organ is an individual item which may track down the object which caused it. In order for this to be the case, the species must be received in a sense organ, so that it can be individuated by the matter of that organ. In other words, it is the spatio-temporal conditions of the experience, not its content, which make it the experience of a certain individual. Since the intellect is immaterial, on the other hand, species cannot exist in it as individuals, i.e. they are not spatio-temporally individuated by matter, and thus particular objects cannot be cognised - as individuals - by the intellect.

In Pasnau's interpretation, this distinction due to Aquinas amounts to the following. Since any action is due to the form of the actor, not to its matter, forms can convey some information about matter when they are received in a corporeal organ, but cannot do that when they are received in something immaterial. This would avoid the content fallacy, in Pasnau's view, since the argument would be the following:

- a) Intellect is immaterial
- b) What is immaterial cannot receive information about matter

- c) Intellect cannot have cognition of anything material

In this case b) bridges the gap between intrinsic and intentional features of representations. If we evaluate Aquinas's reasons to support b), though, we get in trouble again. Those reasons are not put forward in *Questiones de veritate*, but are found by Pasnau in the *Summa contra Gentiles*, where Aquinas explains that the

form of something material cannot act on something immaterial, whereas a form of an immaterial thing can act on something material.⁶⁵ In Pasnau's rephrasing,

"C1*. A form in a material state cannot, by acting, convey its likeness to something immaterial

C2*. A form in an immaterial state could, by acting, convey its likeness to something material."⁶⁶

These claims explain why material objects can act on the senses, through their form, but not on the intellect. They are also a reason why Aquinas has to introduce a special part of the intellect, the active intellect, capable of stripping phantasms of their material conditions and impressing them on the potential intellect: the intellect cannot cognise particulars directly, since it cannot be acted upon by them. The problem is that now the content fallacy appears again. C1* is open to two readings, an intrinsic one and an intentional one:

C1*a A form that is intrinsically material cannot, by acting, convey its likeness to something intrinsically immaterial

C1*b A form that is representative of matter (i.e., intentionally material) cannot, by acting, convey its likeness to something intrinsically immaterial

The former is what is needed to explain why material objects cannot act on the intellect, but the latter is what would justify b). Thus there are two functions which the active intellect should perform: "a) to alter the intrinsic properties of phantasms, by making material likeness immaterial; b) to alter the intentional properties of phantasms, by turning representations of material particulars into representations of

⁶⁵ *SCG*, 1, 65, 537.

⁶⁶ Pasnau 1998, 311.

universals."⁶⁷ According to Pasnau, Aquinas seems worryingly to fail to distinguish the two functions, and does not give any reason to believe that the active intellect should perform them both. "And so once again we have the content fallacy at work. Facts about what our cognitive faculties are like are being invalidly used to infer facts about what those faculties can know."⁶⁸

I have already pointed out that the argument discussed by Pasnau is not the argument for the immateriality of the soul, but its reverse. However, one needs just to substitute A1 and A2 with the two corresponding conjuncts of the conclusion and, after readapting consequently the rest of the premises, one obtains the argument for the immateriality of the intellect (let us say 'B-argument').

- B1 the senses have cognition of singular things (premise)
 - B2 the intellect has cognition of universals (premise)
 - B3 cognition is the reception of the form (likeness) of the cognised object
(premise)
-
- B4 a thing's likeness, as received in sensation, represents that thing as it is
individual ("singular") (from B1 and B3)
 - B5 a likeness received in the intellect, in contrast, represents that thing in
terms of a universal nature (from B2 and B3)
 - B6 "in material and corporeal beings the common nature derives its
individuation from matter existing within specified dimensions"
(premise).
 - B7 "the universal comes into being by abstraction from [...] matter and
all the individuating material conditions" (premise)

⁶⁷ *Ibid.*, 313.

⁶⁸ *Ibid.*, 314.

B8 the senses must receive a likeness corporeally (from B4, B6)

B9 the intellect must receive a likeness incorporeally (from B5, B7)

When a last premise is added

B10 everything received corporeally is received in something corporeal
 and everything received incorporeally is received in something
 incorporeal (premise),

then, from B8 and B9 the conclusion that the senses are powers of corporeal organs
and the intellect is immaterial follows.

Pasnau's objection can be extended to this argument. B4 and B5 correspond to
A9 and A10, and once more they are the problem. In order for B8 and B9 to follow
from them, they should be given an intrinsic reading, but it is only in their intentional
sense that they follow from B1, B2 and B3. Pasnau's consequent discussion can then
be repeated, with the due variations. In this way, his objections count also against the
argument for the immateriality of the intellect. The criticism which I am about to
advance against his objection, then, will be a defence also of the argument for the
immateriality of the intellect.

My main point is that, notwithstanding a detailed and sophisticated analysis,
Pasnau overlooks an important thesis assumed by Aquinas: according to the latter,
the likeness of the external things existing in the senses and in the intellect, are not
what is cognised (*quod*), but the means (*quo*) of cognition.⁶⁹ As we have already
mentioned, he does not take representations (likenesses) to be the internal objects of
which a cogniser is aware, but the acts of the sense or the intellect through which
external reality is cognised, although they may become the objects of cognition in
acts of second intention.

The root of Pasnau's mistake seems to be the twofold distinction between intrinsic and extrinsic features of representation which he uses to describe the content fallacy. A threefold distinction, indeed, would be more suitable: thoughts may be i) mental acts, i.e. psychological occurrences; ii) content carrying vehicles; iii) contents. Pasnau's account of the fallacy is ambiguous between the charge that iii) is confused with i) and that it is confused with ii). Were i) and ii) identical, the ambiguity would dissolve, but from Aquinas's point of view they are not identical. His claims to the effect that thoughts are acts of the intellect as opposed to internal content carrying objects makes all the difference.

As a consequence of the failure to appreciate the bearing of the distinction between i) and ii), Pasnau's interpretation of Aquinas's claim that the intellect receives universals is probably wrong. In fact, he takes this to mean that the intellect turns "representations of material particulars into representations of universals."⁶⁹ Similarly, he could be wrong in interpreting Aquinas's awkward claim the intellect "represents [a] thing in terms of a universal nature" as meaning that "things are represented in the intellect as universal."⁷¹ Universals are not the intentional content of representations, and this suggests that there may be room to close the gap causing the fallacy. To see how this may be done in more detail, one should focus on premises A8 and A9, and on the problem of the individuation of a "likeness."

Let us recall that Aquinas's claims about matter being a principle of identity (as we have seen in chapter one) refer to secondary, not prime matter. A man is the man he is because he is made of those bones and that flesh, but this means that his secondary matter remains unchanged, even if the prime matter which his form

⁶⁹ *ST*, I, 85, 2, c

⁷⁰ Pasnau 1998, 313.

⁷¹ *Ibid.*, 300.

actualises at each time changes. A way of interpreting this, developed by Strawson⁷² in an Aristotelian framework and extended to Aquinas by Haldane,⁷³ is to claim that identity is due to spatio-temporal continuity. A man is the man he is and different from other men, because the matter structured by his form at each time is not the matter structured by the forms of other substances at that time. Furthermore, continuity through time is secured by the fact that, even if the prime matter actualised by the form of a thing may change, its secondary matter remains unchanged, at least at a high degree which allows criteria of re-identification of that object to be specified. For example, the form of a man may structure different prime matter at different times, but its secondary matter will remain grossly unchanged: his bones and his flesh will always be those bones and flesh, at least as far as that man will be re-identifiable in space-time.⁷⁴

It seems to me that all this applies to the case of cognition. As we saw, Aquinas takes cognition to involve the cognitive power to become formally identical to the cognised object. In the case of perception, the sensations occurring in the senses consist in the senses becoming formally identical to some of the properties of the external object; the internal sense, in its turn, becomes identical to the external object and the phantasm in it is a likeness of that object, i.e. the form of the object existing intentionally. Now, since the internal sense is material, the form received by it structures something material. As a result, the resulting item, i.e. the phantasm or image in the internal sense, is a particular identifiable in space-time. What makes an image *i* the likeness of the object *o* is the fact that *i* originated in the senses through

⁷² Strawson 1959.

⁷³ While discussing Aquinas, Haldane notes that "prime matter is best understood [...as] space-time, conceived of not as a pure receptacle but as the counterpart to structuring natures, and as restricted to the instantiation of these" (2002, 96).

⁷⁴ Naturally, this does not imply that prime matter is some sort of stuff: prime matter is not another kind of matter to secondary matter in the same sense in which gold is another kind of matter to gold. These issues were discussed in Chapter One.

the form of *o* (that very numerically identical form) actualising the senses at a certain space-time. Being a material particular, *i* can be identified through its spatio-temporal history, and thus it is numerically different from other likeness caused by *o* or by other objects at different times and/or spaces. Its being a likeness of *o* and thus its tracking the object *o* depends on its being a particular structured by the form of *o* at a certain time in which *o* was perceived. On the other hand, an intelligible form existing in the intellect is not a material particular, and thus cannot be identified in the way that material particulars can. At time *t1*, the object *o1* may cause the intellect to entertain the form *O1*, and at a time *t2*, the object *o2*, formally identical to but numerically different from *o1*, may cause the intellect to cause the form *O2*. Being *o1* formally identical to *o2*, the forms *O1* and *O2* entertained by the intellect will also be formally identical. Being *O1* and *O2* immaterial, though, they cannot be numerically different, and thus they would be the same form, *O*. Thus, the form *O* may track all objects *oi* formally identical to *o1* and *o2*. This is what Aquinas means by claiming that forms in the intellect, since they are immaterial, are universal: they can track all the individuals of a certain kind. This is also why the universal is not the content of the representation (*quod intelligitur*), but is the representation itself (*quo intelligitur*): the content of the representation is the set of all the individuals that the universal tracks. Consequently, *b** and *c**, revised versions of *b* and *c* respectively, can be proposed as suitable candidates to bridge the gap of the content fallacy:

- a) the intellect is immaterial
- b*) what is immaterial cannot receive a material particular likeness
-
- c*) the intellect cannot have cognition of particulars

In this way, the claim that a likeness of the intellect is universal, is identical to the claim that its representational content is universal, in the sense that it tracks all the individuals of a certain type, but it is not identical to the claim that its representational content is *a* universal (apart from cases of second intentions, when the intellect reflects on its own operations). Thus, the content of an intellectual representation of something material⁷⁵ - in a first intention - is always constituted by material things, and this explains the consistency between these theses and Aquinas's idea that the intellect can know material things as such, since the matter is part of their definition:

Physical objects [...], though they are intellectually discerned in abstraction from matter, cannot be completely abstracted from sensible matter; for man is understood as including flesh and bones; though in abstraction from this flesh and those bones. But the singular individual is not directly known by the intellect, but by the senses or imagination.⁷⁶

Pasnau's worries concerning the asymmetry between colour and materiality in Aquinas's treatment of intentional existence, which were mentioned above, can now be dissolved. It is not the content of intellectual representation which needs to be immaterial, since the intellect is immaterial, but is the act of representing which needs to be immaterial in order to represent in the way it does, i.e. without being a spatio-temporally individuated item.

As we saw, according Pasnau's interpretation of the passage by Aquinas which led to a)-c),⁷⁷ the reason why the intellect cannot cognise individuals is that the likeness received in it cannot convey information about matter since it is immaterial.

⁷⁵ Of course, this is not the case of angels, God, and other immaterial realities (maybe including also numbers): in such cases the intelligible species is not received through the senses, and it does not track material particulars.

⁷⁶ CDA, III, 8, 716: "*Naturalia* vero intelliguntur per abstractionem a materia individuali, non autem per abstractionem a materia sensibili totaliter. Intelligitur enim homo, ut compositus ex carnibus et ossibus, per abstractionem tamen ab his carnibus et his ossibus. Et inde est, quod intellectus non cognoscit directe singularia, sed sensus vel imaginatio."

⁷⁷ QDV, 19, 2 c.

If that reading were correct, Aquinas's passage would be inconsistent with that just quoted, where it is clearly stated that matter is part of the definition of a thing which is grasped by the intellect. The point made by Aquinas in the former, passage, however, can now be reinterpreted: since the species received in the senses are the result of the action due to the form of things, things of the same type would cause the same species in the sense, and, thus, they could not be distinguished one from the other. Since the senses are powers of corporeal organs, though, the species are received in matter (although intentionally, non naturally), and thus they are spatio-temporally determined, i.e. they are particulars. In Aquinas words: "they are received in a way as material, and so as particular." In the intellect, on the other hand, the species "can be a source only of universal cognition", since the intellect "is altogether devoid of matter." Note that, consistently with my interpretation, and contrary to Pasnau's, the claim here is that the species in the intellect can be sources of universal cognition, not that they are the (universal) objects of cognition. Finally, the intellect can know individuals through a "kind of reflection to phantasms", for as we have seen above - thoughts about individuals are possible through the deployment of universal concepts and their role in focusing the attention on possible of past experiences, as stated at the beginning of this section.

The consistency between the immateriality of intellectual cognition and the idea that the intellect can be acquainted with matter can now be explained: a species existing in the intellect tracks all objects of a certain type, independently from their material spatio-temporal conditions, but it is a characteristic of all those objects that they act on the senses in a certain way and produce a certain range of experiences. These are powers that they have in virtue of being material, and thus their matter is represented in the intellect by the intellectual form as a common feature of all objects

of that type. This is secondary, matter, however, and thus it is represented in virtue of the form which makes it suitable to receive the form received by the intellect.

Let us now see how the substitution of b) and c) by b*) and c*) offers a suitable bridge to overcome the alleged fallacy pointed out by Pasnau. As we have seen, according to Pasnau, a), b) and c) were meant as the links needed to make an inference from

A5. the senses must receive a likeness corporeally

A6. the intellect must receive a likeness incorporeally)

to

A5#. The senses must receive a likeness representing the thing being sensed as corporeal.

A6#. Intellect receives a likeness representing what it understands as incorporeal and immaterial.

(naturally, the argument a) - b) - c) is meant to bridge A6 and A6#: a parallel argument should be proposed for A5 and A5#).

Given the above criticism to Pasnau's understanding of the way in which the species exist in the senses and in the intellect, A5# and A6# are unacceptable. In fact, as we have seen above, contrary to what A5# claims, also the intellect - as well as the senses - must receive a likeness representing a corporeal thing being thought of as corporeal (since it is part of the definition of corporeal things that they are made of some kind of secondary matter). For the same reason A6# must be wrong, according to Aquinas: the species existing in the intellect does not represent what it understand as being incorporeal or immaterial, since - as we saw - its content is universal (it understands all things of a certain type), not *an* universal (an immaterial common feature of all things).

a) - b*) - c*), and a parallel argument for the sense, suggest that the senses, since they are material cognitive powers that receives a form in matter, i.e. in determined spatio-temporal conditions, must have cognition of particulars, whereas the intellect, which is immaterial and cannot receive material particular likenesses, cannot have cognition of particulars. As explained above, this means that the sense can only have cognition of individuals as individuals, whereas the intellect can only have cognition of individuals as members of a class of things of a certain types. In other words, A5# and A6# can be substituted by

A5#. The senses must receive a likeness representing the thing being sensed as individual.

A6#. Intellect receives a likeness representing all the members of the class of things to which what it understands belongs.

These follow from A1, A3, A4 and A2, A3, A4 respectively, and the conclusion that "individuals are known by the senses, and universals by the intellect" follow from them.

In conclusion, I believe that Aquinas's arguments for the immateriality of the intellect, at least versions of the second type, can resist the accusation of committing the content fallacy. This shows them harder to defeat than it might seem at first and supports their strength, even if it does not prove their ultimate cogency.

2.3 The Soul as a Substance

Aquinas's thesis that the intellect is a faculty of the individual soul, i.e. that each individual soul has its own intellect, was not a universally accepted

interpretation of Aristotle, and Aquinas had to defend it against the contrary view suggested by Arab commentators and endorsed by some of his contemporaries. As I have already mentioned, this was the main purpose of his *De unitate intellectus adversus Averroistas*, written against Siger of Brabant. Aquinas's main complaint against the Arab interpretation, is that it would be "an implicit denial of the existence of thinking in the human individual",⁷⁸ which is an undeniable truth of our experience. The fact that each individual human soul has an activity, thinking, which is intrinsically independent from the body, leads Aquinas to conclude that each human soul is a substance, since it can exist independently from the body:

The intellective soul acts through itself, inasmuch as its proper activity occurs without the body sharing in it. And since a thing acts in so far as it is in act, it follows that the intellective soul has existence through itself, independently. Its existence does not depend on the body.⁷⁹

By saying that something "acts through itself", Aquinas means that its action is possible in virtue of itself only, independently from other things. "A thing acts in so far as it is in act" because its act is its form, the structuring principle through which it is that particular thing, and what actions a thing can perform depends on what it is, i.e. on its structure and in the way it is organised. Furthermore, by structuring it, a form makes a thing actually be, and thus gives it its act of being. Consequently, the fact that the intellect can act independently from the body entails that its act of being is independent from that of the body, and, thus, "its existence does not depend on the body." Since the intellect is one of the faculties of the soul, this entails that the existence of the soul does not depend on the body. This means that the soul has its own being in an unqualified sense in the sense defined in chapter one, and thus it

⁷⁸ CDA, III, 7, 695: "ad positionem hanc sequitur, quod hic homo non intelligit."

⁷⁹ QDA, 1, c: "Et sic oportet quod anima intellectiva per se agat, utpote propriam operationem habens absque corporis communione. Et quia unumquodque agit secundum quod est actu, oportet quod anima intellectiva habeat esse per se absolutum non dependens a corpore."

subsists, it is a substance.⁸⁰ In this way, Aquinas is led to claim that the human soul is the form of the body, but is also a subsistent, *per se* entity, a substance on its own. This conclusion will constitute a ground for Aquinas's most famous argument for the immortality of the soul.⁸¹

Aquinas himself is aware that his conclusion may be problematic and underlines a possible worry. As we have seen in chapter one, a substance is a thing of a certain sort, i.e. it falls under a certain sortal concept, because of its structure and organisation, which, in turn, depends on the form giving it being in an unqualified sense. Falling under a sortal concept, it has a certain nature, or, in Aquinas words, it is "complete in some species and genus of substance."⁸² In other words, when a thing is a substance it has a being in an unqualified sense such that it falls under a certain sortal concept, and it possesses all the essential properties which characterise things falling under that concept. Aquinas's worry originates from the fact that a disembodied soul is not "complete in its species": a human being, i.e. a rational animal, is the composition of soul and body, not a soul alone.⁸³ On the other hand, the disembodied soul cannot be simply a form, since forms only exist when structuring matter, but it cannot fall under a different sortal concept either, otherwise its identity would be lost; in other words, disembodiment would end up being a sort of corruption of the soul, and the disembodied soul would not be the same thing as the form which structured the body before being disembodied. This is implausible,

⁸⁰ Cf. *ST*, I, 75, 2, c.; *QDA*, 1 and 14.; *DSC*, 1, 1, ad 6, and *ibid.* 1, 2, c.; *SCG*, II, 68, 7; *CDA*, III, 7, 680-88.

⁸¹ His point is that a subsistent form, being all forms actualities, is necessarily in act, and thus cannot lose its existence (in cases of non-substantial forms, the corruption of the form amounts to the loss of the matter which it organises). Cf. *ST*, 75, 6, c. On Aquinas and the immortality of the soul see Treolar 1990, Cross 1997, St. Hilaire 1960 and Kelly 1967. On the consequences of Aquinas's views on the character of the existence of a soul after death see Owens 1974. According to Owens, Aquinas is forced to admit that, after disembodiment, it is possible that the soul keeps existing, but it cannot act.

⁸² *QDA*, 1, c.: "completum in aliqua specie et genere substantiae"; see also *CDA*, II, 1, 213 and 215; and *ST*, I, 75, 2, ad 1.

⁸³ *ST*, I, 75, 4.

since it undermines one of Aquinas's most important claims concerning the human soul, namely that it exists through itself and it is at least possible that it survives disembodiment. Furthermore, this would be inconsistent also with the lengthily supported conclusion that the human soul is identical to the form of the body. Aquinas's only way out seems to grant the fact that the human soul is an anomalous kind of substance. He distinguishes two senses of 'substance': something is a *substance1* if it is subsistent, and something is a *substance2* if it is complete in a species. He can then claim that

since the human soul is a part of a human nature, it can be called "a definite this"⁸⁴ in the first sense, as subsistent, but not in the second sense. It is the composite of soul and body which is "a definite this" in the second sense.⁸⁵

Thus, a soul can be called a substance only in the first sense of 'substance'; the soul-body composite, instead, is a *substance2*. This does not entail that the soul and the composite in which it enters have different acts of being in an unqualified sense. As we have seen in chapter one, a thing receives an act of being in an unqualified sense when it begins to exist as a thing of the sort which it happens to exemplify, and that is the case when some suitable matter is organised by a certain principle of organisation, a form. Thus, had body and soul different acts of being, they should have different forms. In that way, though, the identity between the form of the living body and the disembodied soul would be jeopardised. Consequently, the body-soul composite must have the same very act of being (in an unqualified sense) of the soul:

the soul communicates that existence in which it subsists to the corporeal matter. Out of this matter and the intellective soul there results one being, so that the existence of the whole composite is also the existence of the soul.⁸⁶

⁸⁴ "Definite this" is an Aristotelian expression referring to substance as a something of a certain sort. This issue was mentioned in chapter one.

⁸⁵ *ST*, I, 75, 2, ad 1: "cum anima humana sit pars speciei humanae, potest dici hoc aliquid primo modo, quasi subsistens, sed non secundo modo, sic enim compositum ex anima et corpore dicitur hoc aliquid." See also *CDA*, II, 1, 215, and *DSC*, 2 and 16.

⁸⁶ *ST*, I, 76, 1, ad 5: "anima illud esse in quo ipsa subsistit, communicat materiae corporali, ex qua et anima intellectiva fit unum, ita quod illud esse quod est totius compositi, est etiam ipsius animae."

This is possible since the soul (among other immaterial powers, such as intellection and volition) has the capacity to structure and organise appropriate matter into a living body; it is also the form of the body.

In this way, though, Aquinas seems to be led to a view which is problematic in many ways. Donald Abel (1995), for example, complained that, since the intellect needs phantasms to perform its own natural acts (i.e., thinking), and since phantasms are bodily items, the intellect can only perform its own natural acts in this life, when embodied. In this way, although

it may be true that the human soul's dependence on phantasms is "extrinsic" rather than "intrinsic", there is nonetheless a dependence. It is odd for a substance, which by definition exists through itself, to be unable to perform its fundamental natural activity without relying on something external to it.⁸⁷

Abel's worry, however, seems to rest on a misleading interpretation of "exists through itself", and on a confused notion of reliance. Saying that something exists through itself, in fact, cannot amount to the view that it does not rely on anything else, not even as far as its "natural", essential activities are concerned. A living thing, e.g. a plant, exists through itself, and growing is one of its natural activities. Nonetheless, its process of growth relies on something external, e.g. the availability of suitable nourishing substances in the environment. It seems to me that parallel examples of reliance and dependence can be indefinitely repeated for all substances and for several of their essential properties. If they constitute a problem, the human soul is not an isolated case, but the very notion of a substance is endangered. Let us recall that the idea that a substance exists through itself alone taken in the radical sense indicated by Abel is what led some philosophers, e.g. Spinoza, to conclude that there is only one substance, i.e. "God or nature." However, Aquinas's, and Aristotle's,

notion of substance is far both from Spinozian substance-monism and from its presupposition, i.e. the view that substances are radically independent from anything else. Aquinas's only commitment is with the view of independence presented in chapter one, which does not entail the thesis that substances do not depend on anything else.

One could make Abel's point stronger, by pointing out something peculiar about human souls as substances: the intellect does not only rely on phantasms to carry on its natural activity (thinking), but it also needs them in order to exist in full actuality. In fact, the potential intellect cannot receive any actuality before universals are abstracted from phantasms and "inscribed" in it by the active intellect. The problem could then be that the soul depends on the body for its very act of existence, not only in order to perform its natural activities. All this, though, does not need to worry Aquinas, for two reasons. First, the act of the active intellect does not depend on the body at all, and this could be enough to claim that the soul whose intellect it is exists independently from the body. Second, even if the objector insists that both active and passive intellects need to have some actuality if a soul is to exist, Aquinas could reply that once the passive intellect has received some universals, it exists, even if it stops receiving them because phantasms are no longer available to the active intellect after disembodiment. In this way, phantasms (and thus the body) would be needed for the passive intellect (and thus the human soul) to come into existence as an active power or agent, but they would not be required for its endurance. In other words, although it is true that the soul needs the phantasms received from the body to perform some of its activities, this is the case only for its initial actualisation, not for its continuing activity. That is, the soul could outlive the body, even in the case that it could not pre-exist it. In conclusion, souls are

⁸⁷ Abel 1995, 232.

dependent on the body, as Abel claims, but theirs is a contingent dependence which may be transcended.

According to Abel,⁸⁸ human souls would be anomalous substances also in the sense that they would conflict with a full bodied Aristotelian hylomorphism. Assuming that Aquinas's interpretation of Aristotle is wrong (but we will not deal with this exegetical question), this may indeed be the case. However, Aristotle himself certainly admitted the possibility of forms existing without matter. It may be contentious that this is the case of his human intellect (active only, as in Avicenna's interpretation, or both active and passive, as in Aquinas's), or the case of the celestial souls moving the heavens. But this is certainly the case of his first cause, which is "pure act" and the supreme end, moving all things through desire.⁸⁹ Thus, Aquinas did not revolutionise Aristotle's views on hylomorphism, but, in the worst case, moved his borderline separating the realm of enmattered forms from that of immaterial (or pure) forms. Consequently, the mere fact that Aquinas does not assume a full bodied Aristotelian hylomorphism, while accepting his general metaphysical outlook, does not *prima facie* suggest that there is an inconsistency in his views. If an inconsistency really exists, it needs to be spelled out, and Abel does not do this. His point is historically inaccurate and theoretically inconclusive.

A more preoccupying worry about Aquinas's thesis that the human soul is both a substance and the form of the body, which was put forward by Gregory Coulter,⁹⁰ has to do the fact that it leads him to the conclusion that the disembodied soul and the actual living human being whose soul it is have one and the same act of being. According to Coulter, this view is open to two objections.

⁸⁸ *Ibid.*

⁸⁹ Cf. Aristotle, *Metaphysics*, XII.

⁹⁰ Cf. Coulter 1990. Abel also mentions this worry, although he does not really explain what the problem is (Abel 1995, 233).

Coulter's first objection is grounded on Aquinas's thesis, which we have already discussed, according to which something which is in an unqualified sense can only receive being in a qualified sense, unless it gets corrupted. Coulter relies on Aquinas's argument against the possibility that there are more souls in one man. This view is unacceptable, in Aquinas's opinion, since, were it the case, then the union between the intellective soul and the body would be merely accidental, for everything which is received in something which already has complete existence is received accidentally.⁹¹ Coulter complains that

a thing complete in existence can only unite accidentally to something else, precisely because having a complete existence entails having a complete essence. According to this ontological requirement, if the *mens* subsists, it could not be a substantial form - it could only unite accidentally to the body.⁹²

The problem is, in Coulter's view, that on many occasions⁹³ Aquinas clearly states that none of the hylomorphic components, i.e. matter and form, can have complete existence, since only the resulting compound is in an unqualified sense. However, it is also true that, at many other points, Aquinas asserts that there are immaterial forms, namely forms which exist without structuring any matter, like angels and God. Leaving theological considerations on the side, such a possibility rests on Aquinas's theses on the immateriality of the intellect, according to which understanding is an activity of immaterial things, which consists in them becoming formed and structured in certain ways.⁹⁴ Once this possibility has been granted, there is nothing inconsistent in the idea that some immaterial form, capable of understanding, may also structure and organise matter. Such a thing can be a substance₁, since it exists through itself, but may fail to be a substance₂, if

⁹¹ Cf. *SCG*, II, 58, 6.

⁹² Coulter 1990, 168.

⁹³ Coulter points to *EE*, 6; *ibid.*, 2; *SCG*, II, 54, 4 and 6; *ST*, I, 65, 4, c.; *ME*, VII, 7, 1419 and 1423.

⁹⁴ On this see Sullivan and Pannier 1995.

structuring matter is essential for it. It seems then, that Aquinas has the resources to meet Coulter's first objection.

Aquinas's possible reply, however, is problematic in the light of Coulter's second objection. This consists in the complaint that saying that something is a substance¹, but fails to be a substance², is inconsistent. In other terms, one thing cannot be "complete in existence", but have an incomplete nature. In fact, Aquinas claims, as mentioned above, that all things are in an unqualified sense through their forms, but also that it is in virtue of their forms that they have certain natures. How can a form of a thing make it be in an unqualified sense, while leaving it with an incomplete nature?⁹⁵ The soul, however, is supposed to do precisely this. Coulter notes that Aquinas was aware of the problem, and that his ultimate attempt to solve it was the following:

the fact that the intellectual substance is united to the body as form does not prevent one saying, as the Philosopher did, that the intellect exists separately from the body. For one can think of the form in terms of its essence (*ipsius essentiam*) and its power (*potentia eius*). Now according to its essence, it gives existence to such body; but according to its power, it causes the proper operations. Thus, if an operation of the soul is completed through a physical organ, it is necessary that the power of the soul which is the principle of that operation be an act of that part of the body through which its operation is completed; just as sight is the act of the eye. If, however, its operation is not completed through a physical organ, its power will not be an act of any body. And so the intellect is said to be separated, nor does this prevent the substance of the soul whose power is the intellect or the intellective soul, from being the act of the body as a form giving existence to a body.⁹⁶

⁹⁵ I think that this is a fair summary of Coulter's main point (cf. Coulter 1990, 170-3).

⁹⁶ SCG, II, 69, 5: "Nec tamen per hoc quod substantia intellectualis unitur corpori ut forma, removetur quod a philosophis dicitur, intellectum esse a corpore separatum. Est enim in anima considerare et ipsius essentiam, et potentiam eius. Secundum essentiam quidem suam dat esse tali corpori: secundum potentiam vero operationes proprias efficit. Si igitur operatio animae per organum corporale compleatur, oportet quod potentia animae quae est illius operationis principium, sit actus illius partis corporis per quam operatio eius compleatur: sicut visus est actus oculi. Si autem operatio eius non compleatur per organum corporale, potentia eius non erit actus alicuius corporis. Et per hoc dicitur intellectus esse separatus: non quin substantia animae cuius est potentia intellectus, sive anima intellectiva, sit corporis actus ut forma dans tali corpori esse."

This would avoid the problem, in Coulter's view, since it would introduce a distinction between the intellective power of the soul (i.e. the *mens*, capable of separate existence, and, thus, subsistent) and the soul as substantial form (i.e., the soul which only exists as an act of a body). If these are separate items, the former may be a substance₂, although the latter is not a substance₁, without the risk of any inconsistency. However, this solution is unacceptable, according to Coulter, since "this distinction of reference between soul and the *mens* has profound difficulties": either it leads to the claim that the *mens* is subsistent, but separate from human nature, or it has to be taken as a mere *façon de parler*, and *mens* and soul have to be subsequently identified, with the result that the contradiction is reintroduced.⁹⁷ Aquinas would then use equivocally the term '*mens*', taking its referent as a subsistent separate item and as a power inhering in a soul at different times.

It seems to me that Coulter's interpretation of the last passage is dubious, since, when claiming that "one can think" about the term "form" in two ways, Aquinas does not intend to introduce two referents of the term, but two senses; one through which the human form can be thought to be subsistent (a substance₁), i.e. an incorporeal entity, the other through which it can be conceived as incomplete in nature (failing to be a substance₂), i.e. a substantial form, which, by its nature, structures a body. In other words, in that passage Aquinas simply states the usual solution grounded on the distinction between 'substance₁' and 'substance₂'. The soul may have different aspects, which are the ground for the possibility to think of it in different ways, but it may be one entity nonetheless.

At this point I would like to suggest that this distinction is not as problematic as Coulter takes it to be. There is no inconsistency in the claim that something may be a substance₁, but fail to be a substance₂. Let us imagine that a substance *s* has the

⁹⁷ Coulter 1990, 176-8.

essential properties $p_1, p_2, p_3, \dots, p_n$. In virtue of these properties s can act in determinate manners and manifests a certain nature (i.e. is a substance¹, and falls under a sortal concept S). If s loses the essential property p_m , belonging to the set $(p_1, p_2, p_3, \dots, p_n)$, it stops being that particular substance, and goes out of existence, i.e. gets corrupted. Eventually it becomes an individual of another sort (e.g., falling under the sortal concept T). Therefore, it stops being that particular substance (s), and becomes a different substance (s'). Let us imagine that the loss of property p_m by s is peculiar in these ways: i) (at least a great part of) the essential properties of s' , in virtue of which it falls under the sortal T , are a subset $([p_1, p_2, p_3, \dots, p_n] - p_m)$ of the essential properties of s , in virtue of which s fall under the sortal S $(p_1, p_2, p_3, \dots, p_n)$; ii) the essential properties in virtue of which s' falls under the sortal concept T $([p_1, p_2, p_3, \dots, p_n] - p_m)$ are such that a thing which possesses them has a disposition and a propensity to acquire the property p_m . It seems plausible to claim that, in this case, although s and s' are two different individuals falling under different sortal concepts, the form of s' is part (in a wide sense which should be specified) of the form of s , and thus it can be claimed that it has an incomplete nature, in respect to s . Similarly, being in virtue of its form that a thing receives its act of being, since the form of s' is a part of the form of s , the act of being of s' is the act of being of s . In respect to the sortal concept S , then, s' is a substance¹, but fails to be a substance². In other words, it has the act of being of an S (i.e., s), but it is not a complete S , it does not have a whole nature of an S , although it has a disposition to have such a complete nature, and nothing inconsistent with it.

What has just been sketched is a coherent and conceivable scenario, although it may be difficult to find examples satisfying all these conditions. The human soul

seems to be such a case, and it may well be the only possible one.⁹⁸ In this context, John Haldane has spoken of "residual substances", i.e. things "to which are transferred certain powers hitherto possessed and exercised by a more extensive and more potent substance."⁹⁹ As an example, he introduces the compound A/B, which is a perfect mix, in the sense that its constituents (A and B) are not independently identifiable, and exist only virtually within the compound but are nonetheless such that one of the two (say A) can survive the destruction of and maintain some of the properties of the compound. He offers a red pigment, which may result from the destruction of some brown pigment as an example.

It might be useful to consider another example, which is a mere analogy, since it involves an object which is not a strict substance, but an artefact, according to the criteria set forward in chapter one: a cracked glass. Let us suppose that the glass under consideration is cracked in a way such that it does not break into different pieces, but it cannot be used for its usual function since it leaks. Since the properties needed to be used for a certain function are essential for an artefact,¹⁰⁰ this object cannot be said to be complete in its nature, i.e. properly speaking it cannot be said to be a glass anymore. However, it maintains almost all the properties which it had before being cracked and which were essential for its function. For example, it has an appropriate shape and it is made of some impermeable material. In a sense, we may even say that, in virtue of these features, it maintains a disposition to acquire the capacity to contain liquids: if the two edges of the crack are perfectly congruent, one just needs to seal it. In this case, we can say that the principle of organisation which

⁹⁸ Aquinas suggests precisely that in *ST*, I, 76, 1, ad 5. In fact, after claiming that the human soul is subsistent, he adds that the same does not happen for other forms. Because of that fact, the soul maintains its act of being after the destruction of the body, whereas other forms do not ("Quod non accidit in aliis formis, quae non sunt subsistentes. Et propter hoc anima humana remanet in suo esse, destructo corpore, non autem aliae formae").

⁹⁹ Haldane 2000, 254, and Haldane 2002, 105.

gives structure and unity to the object is one and the same both before and after the crack occurred. If an analogy between proper substances and artefacts were allowed, we could say that the glass is a substance₂, but it fails to be a substance₁.

Let us now consider the case of human beings, who, as mentioned, may well be the only case of proper substances, which can be substances₂ but fail to be substances₁. A human being (*s*) and his disembodied soul (*s'*) fall under different sortal concepts (*S* and *T* respectively). However, most of the essential properties of *s'* were essential properties of *s*: for example, having an intellective power, and being capable of free choices. (It may well be that *s'*, by losing some of the properties of *s*, has acquired some new property which *s* did not have. For example, by losing a body it may have acquired the capacity to act in more spaces at one time). Being the intellective power and the free will of *s'* the same very power and will of *s*, it may be claimed that the act of being of *s'* is the very act of being of *s*. In respect to *s*, *s'* has lost some essential property, i.e. having a body. Nonetheless, *s'* has maintained a disposition to structure and organise matter into a living human body, and thus it can be said to be the form of that particular human body, i.e. the human body of the human person whose act of being is now the act of being of *s'*, i.e. *s*.¹⁰¹ In this way, *s'* can be said to be a part of *s* (in the wide sense mentioned above), and this is a ground to claim that *s'* is akin to *s* in nature, although it does not possess that nature completely. In other words, a disembodied human soul, is a human being (has the being in an unqualified sense of the human person of whom it is a soul), although it does not have a complete human nature, in that it lacks control of matter actualised

¹⁰⁰ In the weak sense in which an artefact - as such - may be said to have essential properties, i.e. to be a substance. Cf. 1.5 above.

¹⁰¹ The tied relation between a soul and its body is a ground for Aquinas's rejection of the possibility of reincarnation. See George 1996.

as a living body, and, consequently, it cannot exercise all the human capacities and powers (including cognitive ones) which require a body and would be natural for it.

Although this may make sense in Aquinas's terms, some worries may still remain. Since, on Aquinas's view, it is matter which individuates substances, how can we say that a disembodied human soul is an individual, let alone the same individual existing as a human being complete in nature before disembodiment? Forms are individuated by matter, thus a soul, form of the living body, should be individuated by the living body; once separated from it, one could claim, it is not an individual anymore; it is numerically indistinguishable from all other disembodied human souls. In the case of angels, given their immateriality, Aquinas claimed that they can only be distinguished because of their different levels of intelligence, and each angel is like a whole species.¹⁰² Why isn't this the case of disembodied human souls, with all the fatal Avverroist consequences regarding the oneness of human intellect? A solution could be that each human individual has an intellect, which is individualised by the particular structure of her passive intellect, which in turn is the result of the peculiar character of her experience in her previously embodied life. Strawson made this very point when he suggested that

in order to retain his idea of himself as an individual, he [a disembodied ego which has survived to the death of the body] must always think of himself as *disembodied*, as a *former* person. That is to say, he must contrive still to have the idea of himself as a member of a class or type of entities with whom, however, he is now debarred from entering into any of those transactions the past fact of which was the condition of his having an idea of himself at all. Since then he has, as it were, no personal life of his own to lead, he must live much in the memories of the personal life he did lead (...). Disembodied survival, on such terms as these, may well seem unattractive. No doubt it is for this reason that the orthodox have wisely insisted on the resurrection of the body.¹⁰³

¹⁰² Cf., e.g., *ST*, I, 50, 4.

¹⁰³ Strawson 1959, 116

One could insist that according to Aquinas memory is a corporeal faculty, and that, no matter how finely personal experience is specified, it may be the case that two passive intellects may be identical in structure, since they only contain universals. However, the point here is not that of defining how singular thoughts are possible within a conception of the mind according to which thought is essentially universal. Rather it is that of securing the possibility of individual consciousness of disembodied souls. Strawson's point was developed towards this end by Garreth Evans, according to whom

A subject may be amnesiac and anaesthetized, and his senses may be prevented from functioning; yet he may still be able to think about himself, wondering, for example, why he is *not* receiving information in the usual ways. [...] It is essential, if a subject is to be thinking about himself self-consciously, that he be *disposed* to have such thinking controlled by information which may become available to him in each of the relevant ways.¹⁰⁴

Although one has no body, no phantasms in the imaginative power or in memory to which turn one's intellectual capacity, still one can be capable of thinking about himself as an individual, and this is enough to secure that his consciousness is individuated. Being disposed to have one's thinking controlled by information coming from the senses, on the other hand, seems to be a characteristic which a disembodied soul maintains, also from a Thomistic perspective. A disembodied soul, in fact, has a disposition to organise matter, i.e. its living body, and this includes controlling the senses. Furthermore, Aquinas takes singular thoughts as exercises of conceptual capacities, in which attention is directed towards mental images, which are corporeal items, in ways controlled by the habits which constitute the relevant conceptual abilities:

our intellect cannot know the singular in material things directly and primarily. The reason of this is that the principle of singularity in material things is individual matter, whereas our intellect, as I have said above, understands by

¹⁰⁴ Evans 1982, 215 and 216.

abstracting the intelligible species from such matter. Now what is abstracted from individual matter is the universal. Hence our intellect knows directly the universal only. But indirectly, and as it were by a kind of reflection, it can know the singular, because, as we have said above, even after abstracting the intelligible species, the intellect, in order to understand, needs to turn to the phantasms in which it understands the species (...). Therefore it understands the universal directly through the intelligible species, and indirectly the singular represented by the phantasms. And thus it forms the proposition "Socrates is a man".¹⁰⁵

The structure of the passive intellect, then, has not to be taken merely as the storage of universals, but as the habit to direct attention to mental images in ways controlled by one's conceptual capacities. Although mental images may become unavailable, e.g. since one's loses (control over the relevant parts of) one's body, still one may preserve the disposition of one's intellect to manage a conceptually structured control of mental images, that is to maintain a disposition to receive information from the senses. This may be enough to satisfy Evan's condition, and to justify Strawson's reference to memory in his account of the relation of a disembodied soul to the body, which it lost. The dispositions of a soul towards the organisation of its own body and the actualisation of the powers of the body secure its individuation and its identity after its disembodiment.¹⁰⁶

¹⁰⁵ *ST*, I, 86, 1, c: "singulare in rebus materialibus intellectus noster directe et primo cognoscere non potest. Cuius ratio est, quia principium singularitatis in rebus materialibus est materia individualis, intellectus autem noster, sicut supra dictum est, intelligit abstrahendo speciem intelligibilem ab huiusmodi materia. Quod autem a materia individuali abstrahitur, est universale. Unde intellectus noster directe non est cognoscitivus nisi universalium. Indirecte autem, et quasi per quandam reflexionem, potest cognoscere singulare, quia, sicut supra dictum est, etiam postquam species intelligibiles abstraxit, non potest secundum eas actu intelligere nisi convertendo se ad phantasmata, in quibus species intelligibiles intelligit, ut dicitur in III de anima. Sic igitur ipsum universale per speciem intelligibilem directe intelligit; indirecte autem singularia, quorum sunt phantasmata. Et hoc modo format hanc propositionem, Socrates est homo."

¹⁰⁶ This may answer a worry of Gerald Kreyche, according to whom Aquinas's views on disembodiment would lead him to abandon hylomorphism and to accept a form of Platonism. (Cf. Kreyche 1972, especially pp. 482-4). It may also challenge Etzweiler's thesis according to which Aquinas's view would lead to a conception of man as an embodied angel, and to a original synthesis of Aristotelianism and Platonism (cf. Etzweiler 1980). A view to the effect of the former two was suggested also by Kenny 1973, 79-80. Finally, these remarks may explain Aquinas's claim (which is obscure according to Cross 1997) that its body is essential to a soul, since it maintains an inclination and aptitude towards it after disembodiment (cf. *ST*, I, 76, 1, ad 6).

It seems to me that, once one grants Aquinas the possibility of forms existing immaterially and the plausibility of one of his arguments for the immateriality of the intellect, one can accept his views on the human person, conceived as a borderline case between material reality and a transcendent immaterial realm, necessarily existing in a body, but, once his passive intellect has been at least partly informed, able to live separately from it.

2.4 From the Metaphysics of Mind to a Theory of Cognition

A short recapitulation at this point may be needed. The Aristotelian route to metaphysics followed by Aquinas moves from an analysis of what is most evident to us, i.e. to human experience, in order to reach the causes of reality which are empirically unattainable. In chapter one, we have seen how this leads Aquinas to conceive of reality as being the actualisation of an unchanging substratum (prime matter) due to forms, i.e. structuring and organising principles. When a form is such that the acquisition of it purports the generation of one thing and the corruption of another, it is a substantial form, and the thing which it originates is a substance. Prime matter and material forms (i.e. forms of empirically accessible things) can never exist independently one from another, but they only exist as the potentiality and the actuality of some substance or other.

In this chapter, we have noted that the analysis of experience leads Aquinas to follow Aristotle also in admitting that, among all substances, some have an internal principle of growth and decay. They are living substances. Life, however, does not include only growth and decay, but other kinds of activities, such as motion, desire,

sensation, cognition, and understanding. Some of these activities, notably understanding, are independent of any corporeal organ and, thus, can be performed by immaterial substances.

Aquinas has several reasons to admit the existence of immaterial substances, the main of which is the need to introduce a transcendent first cause prompted by his five ways to demonstrate the existence of God. Concerning material reality, however, he suggests that some material substances, i.e. human beings, are capable of intellectual activities which are immaterial. This leads to the conclusion that human beings are hylomorphically constituted like all material substances, but their forms have activities independent from matter and thus may survive the destruction of the bodies which they inform.

A form, on the other hand, is the principle of organisation because of which a substance has its essential properties, and life is the essential feature of a living thing. Since a soul is the principle of life, the form of a living thing is its soul. The substantial form of a human, consequently, is a human soul. This brings Aquinas to the conclusion that a human person is a material being informed by a human soul which is capable both of material and immaterial activities and which may survive the destruction of the body.

Although these views are at odds with contemporary naturalism, we have seen that several of the arguments which lead to some of them are in fact more philosophically plausible than they may seem at a first sight to a modern thinker. The metaphysical outlook which they prompt, as far as the present work is concerned, is the idea that reality is hylomorphically composed, and that some material things (humans) are capable of receiving immaterially the forms of other things, and thus are able to cognise reality. It is within this outlook that Aquinas develops his theses

on formal causation, and the subsequent views of metal representation which will be discussed in the following chapters.

Chapter Three

Aquinas on Causal Relations

3.1 Vertical Causation, Horizontal Causation and Realism

This chapter deals with Aquinas's theory of causation, and is centred on those aspects of causation which are relevant for an account of formal causation, and thus may be involved in a theory of mental representation. This will lead us to pay our attention to the Aristotelian aspects of Aquinas's theory, and to overlook some Platonist elements which are nonetheless present. In order to explain and justify this, however, some remarks on the general features of Aquinas's theory of causation are needed.

Aquinas is famous for being a commentator of Aristotle, and it is commonly believed that he followed Aristotle on almost all metaphysical issues, almost without offering any personal contribution, besides the persistent attempt to christianise his positions. This view is certainly supported by the fact that Aquinas wrote commentaries on all major works by Aristotle. As far as causality is concerned, then, Aquinas's views would be expressed in his commentaries on those passages of Aristotle which deal with the problem of causation, most famously the second book of the *Physics*, and some parts of the fifth book of the *Metaphysics*.

Some scholars, however, have suggested that Aquinas is not strictly Aristotelian,¹ but had strong influences from other sources, especially Plato and late

¹ Cf. Owens 1993.

Platonism, as it is evident in his commentary on the *Liber de causis*. According to Geiger (1942), for example, Aquinas borrowed from Plato the anti-Aristotelian concept of *participation* and made it the keystone of his own metaphysical view. Fabro (1939 and especially 1960), proposed a similar interpretation, but he also claimed that Aquinas really attempted to merge together both Platonic and Aristotelian elements, and, as a result, he ended up with a new and original metaphysical synthesis.

The relevance of these remarks, in the present context, is due to the fact that, according to Fabro, it is precisely on the matter of causation that Aquinas attempts to synthesise Platonism and Aristotelianism. Fabro distinguishes two concepts of causation, in Aquinas: a Platonic one and an Aristotelian one. According to the former, a separately existing form is the cause of all the individuals of which it can be predicated: those individuals *participate* or *partake* of that form. A form and the individuals which partake of it exist on different levels of reality, and, thus, Fabro calls this concept of causation *vertical* or *transcendental*. According to the second, Aristotelian, concept of causation, an individual is caused to exist by that fact that a form actualises some matter which is previously disposed to be thus organised; and an agent which actually possesses the capacity to actualise matter in the due manner is required. This is an instance of the general thesis that the change from potentiality to actuality requires some logically and metaphysically prior actuality. In this case, forms are nothing else than the structuring principles which make things be what they are, and exist in the same level of reality as the things of which they are forms, i.e. in the natural realm. Fabro calls this kind of causation *horizontal*, but also *predicamental*. In Fabro's words:

Aristotelian causality is exclusively horizontal, while Platonic causality is exclusively vertical. According to Plato, intelligibles and first substances alone

are causes, so that the physical world is purely receptive. According to Aristotle, by contrast, physical reality or "nature" has in itself the principles of its own changes. Furthermore, according to Aristotle, causality is precisely the link of the continuous but differentiated transformation of reality.²

About Aquinas, Fabro writes:

[His] deep criticism of the Platonic conception of reality and of the consequent vertical structure of causation highlighted [...] some principles and theoretical suggestions taken from neo-Platonism. These were accepted and merged in the Aristotelian-Thomistic synthesis and represent a keystone at crucial points of Thomistic metaphysics.³

Fabro explains the "principles and theoretical suggestions" which, in his view, allow Aquinas to criticise Platonism and to endorse neo-Platonism at once.⁴ First, there is what he calls "metaphysical participation", namely the idea that all beings which do not exist necessarily, participate in the existence of a being which exists necessarily. Second, there is the idea of "metaphysical" causation: "metaphysical participation" is a kind of causation, but, unlike Platonic participation, an individual does not partake of a transcendent reality as far as its form or structure is concerned. On the contrary, it is its act of being (*actus essendi*), namely its existence, which results from a vertical, transcendental causation. Third, being is an "intensive" notion, i.e. it comes in degrees. Being, in this sense, is not a mere act of an intellect, namely the act through which an intellect apprehends the thing which is said to be. In Thomistic terms, this means that the being of a thing is independent from and precedes any cognition of that thing. Being in this sense is not a real act of existence according to the different categories either. In other words, it does not correspond to the identity, nor to the predication sense of 'to be.' In the sense which Aquinas points towards, being is "the act of every act, namely the supreme perfection in

² Fabro 1960, 323. The translations of quotations from Fabro 1960 are mine.

³ *Ibid.*, 316

⁴ Cf. *ibid.*, 316 ff.

respect of which all forms and perfections have to be considered as partaking."⁵ 'Being', in this sense, is equivalent to 'existence.' Something has being, in this sense, if it exists. It is the "supreme perfection", since all essential properties ("perfections") of things can exist only so far as the things of which they are properties have existence in the first place. Essential properties are called perfections, for the higher is the degree to which essential properties are exemplified in an object, the more that object participates in being, i.e. the more intensely it exists. Being is the perfection of all perfections in two ways: a) being is the act or actuality of all forms and perfections, which are therefore potencies in respect of it; and b) being is extensionally equivalent to the set of all really existing forms and perfections, which, in this way, partake of it. This seems to mean that each form may be realised, i.e. actualised, to different degrees and, consequently, each thing may be what it is (i.e., a thing of a certain kind, falling under a certain sortal concept) to different degrees. A radio which does not work properly, is still a radio: it has the right structure, and in fact it does fall under the concept radio. But it is less of a radio than a second one which works properly. The latter is better structured; namely the form of *radiohood* is better actualised in its case; in Fabro's words, it has more being. Finally, being, in the sense of act of being (*actus essendi*), is the most common effect of the First Cause. (Indeed, this is the basis of one of Aquinas's argument for God as *existence per se*).

Aquinas's synthesis of Plato and Aristotle, according to Fabro, is due to the fact that while he manages to maintain the Aristotelian conception of causation, which rejects the existence of separate forms as exemplars in which things partake (Aristotelian forms, as we have seen, are structuring principles existing in reality), he also accepts the Platonic idea of participation and applies it to being and acts of

⁵ *Ibid.*, 317.

existence. This is particularly interesting as far as forms are concerned. These are principles existing in reality, as Aristotle claimed, but they may also be realised to different degrees, as Plato required. This is possible thanks to the *intensive* use of 'being', i.e. to the fact that the acts of being which give forms their actualities come in degrees. In conclusion, Aquinas's synthesis highlights a link between vertical and horizontal causation: the vertical pertains to existence the horizontal to forms and natures.

It is contentious whether these claims are intelligible, at least as they have been sketched here. Furthermore, they would require much support in order even to look plausible. However, we do not need to explain and justify them. Here, we are looking for an account of Aquinas's theory of formal causation which may help to explain his views on mental representation. The latter were mainly developed in his commentary on Aristotle's *De anima*. Thus, it is an Aristotelian Aquinas we are dealing with, and what he has to say about Aristotelian causation should serve our purposes. Furthermore, from Fabro's thesis it is clear that Aquinas's use of Platonic causal notions such as *participation* is relevant mainly in his demonstration of the existence of the first cause, i.e. a part of metaphysics outside the scope of this work. In conclusion, it seems that, for present purposes, we can focus on what Aquinas has to say about horizontal, Aristotelian causation. However, in analysing Aquinas's views, we also have to bear in mind the fact that he believed also in the existence of vertical causation (participation), and in a link between the two.

Before leaving it aside, though, the relationship between vertical and horizontal causation may be useful in discussing Aquinas's causal realism. It seems beyond dispute that, according to Aquinas, causal connections are metaphysically robust. The links between causes and effects have real existence, independently from our

minds and our thinking about the world. This follows clearly from the ontological and epistemological role of causal links in Aquinas's metaphysics, especially in his demonstrations of God's existence and in his discussions of the causal relations between God and created things. Indeed, all famous five "ways" to demonstrate God's existence⁶ rest on the assumption that the objects of the universe have causes and each "way" considers the need of a particular kind of cause. (The distinction between different kinds of causes in Aquinas is discussed below in this chapter). In each "way", God is introduced as a metaphysically or logically prior cause of all things. The metaphysical bearing of this conclusion, though, depends on the metaphysical strength of the causal link involved in the rest of the argument. Since Aquinas takes the conclusion to show that God really exists mind-independently, he is committed to the view that (at least some) causal links are metaphysically robust. Each of these arguments, furthermore, involves either vertical causation or horizontal causation, or both. The cosmological argument (which is the second "way"), for example, seems to require horizontal causation only. It contends that, in order to prevent an infinite regress of horizontal causation, a first uncaused cause needs to be introduced. The third "way", instead, seems to require vertical causation: it claims that a contingent universe can exist only if a necessary being exists, the latter being God. In this case, the causal relation between the universe and God is a case of participation in the act of being, i.e. an instance of vertical causation.

An exemplar passage where Aquinas manifests his realism on both vertical and horizontal causation at once, while suggesting that God is the cause of all things, can be found in the first part of the *Summa theologiae*:

it has been shown above when treating of the divine simplicity that God is the essentially self-subsisting Being; and also it was shown that subsisting being

⁶ ST, I, 2, 3.

must be one; as, if whiteness were self-subsisting, it would be one, since whiteness is multiplied by its recipients. Therefore all beings apart from God are not their own being, but are beings by participation. Therefore it must be that all things which are diversified by the diverse participations of being, so as to be more or less perfect, are caused by one First Being, Who possesses being most perfectly. Hence Plato said (*Parmen.* xxvi) that unity must come before multitude; and Aristotle said (*Metaph.* II) that whatever is greatest in being and greatest in truth, is the cause of every being and of every truth; just as whatever is the greatest in heat is the cause of all heat.⁷

God is the "subsistent being which exists by itself", in the sense that he does not receive his act of being from anything else. All other things, though, are caused, and thus receive their being from "outside." Strictly speaking, therefore, they are not beings (*entia*), but they partake of being. They receive an act of being because they receive a form (i.e. a structuring principle) from an agent on the natural level, but they remain in existence because they partake of the subsistent being, which is, therefore, another cause of theirs.⁸ Beings may be "more or less perfect", namely each thing may realise more or less of the possibilities characterising the form (i.e. the structure) by which it is individuated. The more a thing actualises a form, the more perfect it is, i.e. the more it partakes of being. Let us consider an example, and imagine that, following the classical definition, each man is essentially a rational animal, so that rationality and animality are characteristics which he possesses in virtue of having the substantial form he has. In this case, the more he acts for reasons, the more he actualises his substantial form, and, consequently, the more he partakes of

⁷ *ST*, I, 44, 1, c: "Ostensum est autem supra, cum de divina simplicitate ageretur, quod Deus est ipsum esse per se subsistens. Et iterum ostensum est quod esse subsistens non potest esse nisi unum, sicut si albedo esset subsistens, non posset esse nisi una, cum albedines multiplicentur secundum recipientia. Relinquitur ergo quod omnia alia a Deo non sint suum esse, sed participant esse. Necesse est igitur omnia quae diversificantur secundum diversam participationem essendi, ut sint perfectius vel minus perfecte, causari ab uno primo ente, quod perfectissime est. Unde et Plato dixit quod necesse est ante omnem multitudinem ponere unitatem. Et Aristoteles dicit, in II *Metaphys.*, quod id quod est maxime ens et maxime verum, est causa omnis entis et omnis veri, sicut id quod maxime calidum est, est causa omnis caliditatis."

⁸ It follows that there are at least two causes of each being: the agent which made it be on a natural level, and the first cause to which it partakes in order to receive its act of being. One may wonder

being. Contingent beings like humans do not possess their acts of being in virtue of their forms, and, thus, must receive them from outside. They must be caused, therefore, by a non-contingent being, i.e. by God.

One may wonder whether this argument shows the causal dependence from God *of all things*, or whether it overlooks the possibility that non-contingent truths, like mathematics, may be causally independent from God.⁹ At any rate, what matters for our purposes is the fact that this passage shows that Aquinas takes causal links to exist in extra-mental reality. It is the claim that a causal link really exists that allows him to infer the thesis that all things which participate in being are caused by God (a creator, a subsistent being) from the premise that there is a world of things which do not "derive" existence from themselves (the creation, which is contingent). If causal links were not real, the conclusion that all things which do not "receive" being from themselves are caused by God would not follow.

One could wonder whether all Aquinas is committed to for the sake of this argument is the real existence of *vertical* causal links. Indeed, the only kind of causal dependence mentioned in the above passage is participation in being, and this is precisely vertical causation. However, we can contend that, in order for the argument to follow, the reality of horizontal causation has also to be assumed. When things come into existence they receive an act of being and, consequently, start partaking of the subsistent being (God) on a transcendental level: in other words, they become effects of a vertical causal relation with God. At the same time, however, all contingent things (i.e. all things which do not receive being from themselves) in the

whether there is a problem of overdetermination of causation; this problem, though, will be discussed below.

⁹ However, Aquinas would dismiss this objection since, according to him, both all possibilities and all necessities are rooted in actualities and thereby in that which is act *per se* and unconditionally, i.e. God. Furthermore, although *necessaria* are not generated and do not perish, according to Aquinas, their existence is not self-explanatory and they can be annihilated, since they are caused to be by God *ex nihilo*. Cf., e.g., *ST*, I, 46, 1.

natural order (i.e. in the material world we have experience of) come into existence when they receive a form from an agent which has the capacity to act on matter in an appropriate manner.¹⁰ This reception of forms makes them effects of a horizontal causal relation. For example, a man exists since he has an act of being which he receives from the subsistent being. However, he came to have that act of being through the process of generation which was carried out by his parents, who also received their acts of being from the subsistent being (Fig. 1).

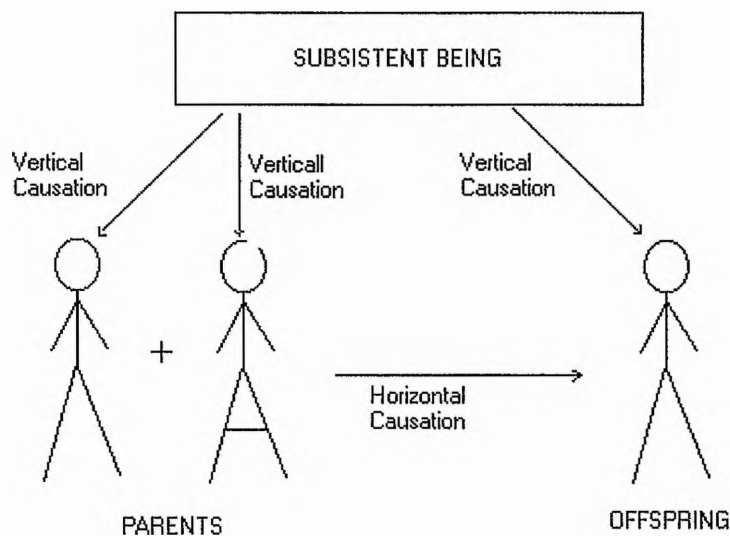


Fig. 1

When, in the passage under discussion, Aquinas claims that all things are effects of vertical causal relations with a transcendental cause (God, the subsistent being), he is committed to the reality of vertical causal links, but also to the claim that all things other than God are not themselves subsistent and, thus, contingent. In

¹⁰ The restriction to the material world is due to the fact that the passage by Aquinas under discussion concerns both generation and corruption (that is the coming and ceasing to be of material substances) and creation *ex nihilo* and annihilation (that is the coming and ceasing to be of *necessaria*, i.e. non material things such as angels). Whereas the former concern the material world and all horizontal causation, the latter are within the capacities of God only, and do not involve all horizontal causes, since they do not concern material things. This restriction in the interpretation of the passage is

the natural order, i.e. in the world we have experience of, on the other hand, things are contingent since they come into existence when they receive a form from other contingent things, and, thus, are effects of horizontal causal links. Thus, Aquinas is committed to the real existence of horizontal causal links as well. If this is true, in his argument, Aquinas needs to assume the real existence of *both* vertical and horizontal causation.

One could ask oneself what it means to say that causal links are metaphysically robust, i.e. that they exist in reality independently from our minds. This claim may be taken in at least two different sense. First, causal links could be particular kinds of entities, which have to be distinguished from causes and effects and taken into account in a complete description of the kinds of objects of our ontology. A supporter of this view has to deal with the difficult task to explain how those entities can be known, or, at least, under what conditions they may be taken to exist. Second, it could be the case that causal links do not constitute a separate class of entities, but are just relations between really existing entities, namely causes and effects. In this case, one needs to be ontologically committed to the two *relata* only, and has to give existence conditions for them alone. A causal connection would be nothing more than a cluster of conditions which necessarily links the two *relata*, because of some of their intrinsic characteristics. An explanation of causality would be wholly provided by the determination of those conditions.

The second view is certainly less demanding from an ontological point of view: it is the most economical as far as the class of entities required are concerned. Whoever endorses the first view is committed to the other, but the reverse is not true, at least *prima facie*. If causal links are real entities, so too must be the causes and

justified by the fact that here we are only interested in the relationship between horizontal and vertical causation.

effects that they link; but causal links could be relations between causes and effects, without constituting a further class of entities. It is not clear whether Aquinas was a realist in the first sense,¹¹ but he certainly was a realist in the second sense (the same is probably true of Aristotle): according to him, as we saw, the existence of real causal links warrants the fact that there must exist entities, such as a creator, which can only be known through their effects.

As we saw, a realist about causation of the second type must be able at least to specify the conditions under which there is a necessary connection between causes and effects. Aquinas makes some attempts of this kind, especially in his commentaries of Aristotle's *Physics* and *Metaphysics*, but also elsewhere in his writings. In the next section we will consider Aquinas's theory of causal explanation, and we will discuss its suitability for the realist requirements that he needs to meet.

3.2 Causal Explanations and the Conditional Analysis of Causation

As it is well known, Aristotle distinguished four kinds of causes, or better, four meanings of the term "cause", but he hardly ever said anything to explain what is common among all of them, namely why they all are kinds of causes, and they are not merely different things. An answer to this problem may only come from the

¹¹ The reason for this doubt depends on the complexity of the discussions on relations in the Middle Ages. The setting of those discussions was dictated by Aristotle's treatment of relations as a separate class of accidental categories. In this context, relations are taken to be accidental, in the sense that they are not substantial, and, as such, do not constitute a separate class of entities, if 'entities' is taken to refer to *per se* objects, viz. substances. Although Aquinas was a non-reductive realist about relations, his realism was due to the fact that, following his master Albert the Great, he took each relation to be grounded on the existence of a *sui generis* accidental property in each substance involved in it; the accidental property would be *sui generis* since it would be irreducible to accidents belonging to other non-substantial categories. The claim of the real presence of such *sui generis* accidents in relations, however, does not entail the existence of relations as mind independent substances or accidents: non-reductive realism is realism about the relational *sui generis* accident existing in each substance

consideration of Aristotelian discussions of other topics. In a passage from *Physics*, for example, Aristotle gives us a hint: "we think we have knowledge of a thing only when we can answer the question about it 'on account of what?' and that is to grasp the primary cause."¹² In his commentary, Aquinas repeats the Aristotelian definition, with the only difference that he explains the sense of "primary cause":

we do not think that we know anything, unless we grasp the "why", which is to grasp the cause. Hence it is clear that we must observe generation and corruption and every natural change in such a way that we know the causes and that we reduce to its proximate cause each thing concerning which we seek the "why."¹³

Aquinas interprets Aristotle as meaning that, at least in the physical domain, we have to look for the "proximate causes" of the things to be explained, i.e. for the last link of the relevant causal chain before the effect which we want to explain. Besides that, he just repeats Aristotle: anything which may count as a satisfying answer to a why-question is a cause.

Aristotle goes on listing four "groups" (or *species*, as Aquinas writes in his commentary) of causes, which are, as it is well known, efficient, material, formal and final causes. The difference among them is explained by Aristotle with the notorious example of a statue.¹⁴ If we want to explain why the statue exists we can give four kinds of answers, i.e. it exists because: a) there is some marble, which was sculpted (material cause); b) some sculptor made it (efficient cause); c) the marble, as a consequence of the sculpting, has a certain form (formal cause); d) a sculptor intended to increase the beauty of his town (final cause).

involved, it does not need to be realism about the relation itself. The debates on relations in the Middle Ages were studied by Henninger 1989.

¹² *Physics*, II, 3, 194b 19-20.

¹³ *PE*, II, 5, 176: "Sed nos non opinamur nos scire unumquodque, nisi cum accipimus *propter quid*, quod est accipere causam: unde manifestum est quod hoc observandum est nobis circa generationem et corruptionem et omnem naturalem mutationem, ut cognoscamus causas, et reducamus unumquodque de quo quaeritur *propter quid*, in proximam causam."

¹⁴ Cf. *Metaphysics*, V, 2, 1013b 5-8.

The reference to final causes is highly problematic for a contemporary reader. It raises two main worries. First, causes are normally taken to precede temporally their effects; on the other hand, the end or purpose for which a certain causal action is performed (e.g., the increase of beauty in the town) is subsequent to the occurrence of the effect (the statue) of that action (the act of sculpting). As such, the end or purpose cannot be one of the causes. Second, end and purpose (e.g., the increase of beauty in the town) presuppose the intentionality of causal processes (the will of the sculptor). Therefore, either the scope of final causation is restricted to human (and possibly animal) actions, or one needs to endorse the idea that nature and the whole of material reality are teleologically organised; this claim, however, is normally taken to entail that they are the result of a divine design. Since both Aristotle and Aquinas conceive of final causes as means of explanation which do not need to be restricted to the domain of human action, they must accept the idea of a divine design. This idea, however, is incompatible with the claim that natural events are fully determined by their physical causes; even biological objects, which traditionally seemed to offer the best examples of final causes independent from human intention, can be explained through the concurrence of physical causes, natural selection, and fitness to the environment.

The first problem may be overcome if we try to be more precise about what Aristotle takes final causes to be. It is not clear whether, according to him, a final cause is the intentional state of an agent (the desire of the sculptor to produce an increase of beauty in the town), or the final result of a causal process (the actual increase of beauty). Sometimes he seems to think about the former possibility, e.g. in examples along the lines of that just presented, but at other times he has certainly the latter in his mind. Even if Aristotle does not mention it, though, there is a possibility

according to which the two views may coexist: if we take an intentional state to have a propositional content, we can claim that one desires that *p* *because* there is a possible state of affairs which "*p*" describes, even if that state of affairs is not a fact yet, and possibly it will never be. The possible state of affairs (the actual increase of beauty), thus, could be taken to be a cause of the intentional state (the desire of the sculptor to produce an increase of beauty), and, consequently, an indirect cause of the resulting action. Therefore, the final cause (the content in the sculptor's mind) precedes the action causing the effect, although it is not an efficient cause of it (the act of sculpting).

The second problem may be overcome either by supporting directly the view that actually there is a Designer of the universe, or through attempts aimed at showing that (at least some sorts of) objects may have purposes and ends independently of their alleged origin from a Designer. The latter possibility, which is more acceptable for contemporary naturalists, may lead one to claim that, just as artefacts could be said to have ends and purposes for which they were constructed, natural living objects could be said to have purposes and ends set by their normal patterns of growth and development. Those patterns may result from design or evolution indifferently. (The teleology of living organisms was already discussed in section 1.5 above. More on final causes and intentional action will be said below, in section 3.4).

The fourfold description of causes may raise the problem of the overdetermination of causation, which Aristotle did not see, but was discussed by Aquinas. In fact, if there are several causes of an effect, it may be the case that any of them could have failed to exist, and the effect came into existence anyway; yet, it is problematic to claim that something is a cause even if its absence, other things being

equal, would have made no difference. Aquinas's solution is interesting because it helps explain Aristotle's fourfold distinction:

That there are several proper causes of one thing becomes evident from the fact that causes are spoken of in various ways. For the maker of a statue is a proper cause and not an accidental cause of a statue, and so is the bronze, but not in the same way. For it is impossible that there should be many proper causes of the same thing which are in the same genus and in the same order, although there could be many causes providing that one is proximate and the other remote; or that neither of them is of itself a sufficient cause, but both together. An example would be many men rowing a boat. Now in the case in point these two things are causes of a statue in different ways: the bronze as matter, and the artist an efficient.¹⁵

The distinctions accidental/proper causes and proximate/remote causes will be introduced in next section. The sense of the passage is clear, though: overdetermination would be a problem (there could not be more causes of one effect, unless "neither of them is of itself a sufficient cause"), but only when there are at least two candidates which are proper causes, are at the same proximity from effect, and belong to the same one of the four groups of causes. Two causes belonging to two different groups are not each sufficient for the effect which they cause when joined together, and, thus, can coexist.

The four causes are not really causes as such, but *groups* or *species* of causes, because each kind of cause may be exemplified by a rather heterogeneous range of instances. Let us consider, for example, the formal cause. Aristotle says that "the whole, the composition and the form"¹⁶ may all be formal causes. Aquinas's commentary is very helpful in making this assertion clear:

¹⁵ ME, V, 2, 773: "quod causae per se sint multae unius, hoc fit manifestum ex hoc, quod causae multipliciter dicuntur. Statuae enim causa per se et non per accidens est factor statuae, et aes; sed non eodem modo. Hoc enim est impossibile quod eiusdem secundum idem genus, sint multae causae per se eodem ordine; licet possint esse plures causae hoc modo, quod una sit proxima, alia remota: vel ita, quod neutrum sit causa sufficiens, sed utrumque coniunctim; sicut patet in multis, qui trahunt navem. Sed in proposito diversis modis ista duo sunt causa statuae: aes quidem ut materia, artifex vero ut efficiens."

¹⁶ *Metaphysics*, V, 2, 1013b 16.

it must be borne in mind that sometimes one thing is the matter of something else in an unqualified sense (for example, silver of a goblet) and then the form corresponding to such a matter can be called the species. But sometimes many things taken together constitute the matter of a thing; and this may occur in three ways. For sometimes things are united merely by their arrangement, as the men in an army or the houses in a city; and then the whole has the role of a form which is designated by the term army or city. And sometimes things are united not just by arrangement alone but by contact and bond, as is evident in the parts of a house; and then their composition has the role of a form. And sometimes the alteration of the component parts if added to the above, as occurs in the case of a compound; and then the compound state itself is the form, and this is still a kind of composition.¹⁷

Aquinas's explanation makes it clear in what sense there may be different kinds of forms which determine the identity of a being, within each group. A similar point can be made for all other groups of causes.

At this point, though, a contemporary reader could raise some objections, starting from a modern conception of causality. The modern conception and its relationship to Aristotelian causation were effectively described by Thomas Kuhn (Kuhn 1971), who distinguished a wide and a narrow sense of "cause." In a wide sense, "cause" refers to the Aristotelian doctrine of causation and indicates an explanation of an event; a cause is whatever may answer a why-question about a certain event:

according to Aristotle, every change, including coming into being, had four causes: material, efficient, formal and final. These four exhausted the types of answers that could be given to a request for an explanation of a change.¹⁸

The narrow sense, according to Kuhn, corresponds to the concept of cause which became prevalent in the physics of the 17th and 18th centuries. In this sense, a

¹⁷ *ME*, V, 3, 779: "Sciendum est enim, quod quandoque una res simpliciter est alicuius materia, sicut argentum phialae; et tunc forma correspondens tali materiae potest dici species. Quandoque autem plures adinvicem adunatae sunt materia alicuius rei. Quod quidem contingit tripliciter. Quandoque enim adunantur secundum ordinem tantum, sicut homines in exercitu, vel domus in civitate; et sic pro forma respondet totum, quod designatur nomine exercitus vel civitatis. Quandoque autem non solum adunantur ordine, sed contactu et colligatione, sicut apparet in partibus domus; et tunc respondet pro forma compositio. Quandoque autem super hoc additur alteratio componentium, quod contingit in mixtione; et tunc forma est ipsa mixtio, quae tamen est quaedam compositionis species."

cause can only be "an active agent, one that pushes or pulls, exerts a force or manifests a power."¹⁹ Roughly, it corresponds to Aristotelian efficient causation. All other groups of Aristotelian causation must be reduced to efficient causation, otherwise they may be considered as explanations, but not *causal* explanations. In his essay, Kuhn notes that in the 19th Century even physicists returned to the use of a wider notion of causation, i.e. by employing formal causes or teleological causes. Among philosophers, however, the idea that only efficient causation is real causation is still prevalent. Other (Aristotelian) causes, many would still say, must either be reduced to efficient causes or ruled out as causes and considered as mere forms of explanation.

The direction of this objection against the Aristotelian-Thomistic view of causation can also be supported by considerations concerning the very definition of "cause" offered by Aristotle and taken over by Aquinas. According to them, anything which may be a satisfying answer to a why-question is a cause. An answer to a why-question, is precisely what, nowadays, following Hempel's notorious distinction, we would call explanation, in a wide, not strictly causal sense, as opposed to a proper causal explanation.²⁰ Charlton, for example, writes in his commentary on Aristotle's *Physics*, while discussing the definition just mentioned:

Aition is traditionally translated 'cause', and I follow that practice, but we should be careful not to be misled by it. We talk of causes operating, and producing effects. Aristotle had no such expression [...]. The Greek word *aition* (connected to the verb 'to blame' 'to hold accountable') is used considerably more widely than the English 'cause'. [...] This being so, we should not expect from Aristotle's discussion of 'causes' light on those problems about causal efficiency and causal connection which were bequeathed by the British Empiricists.²¹

¹⁸ Kuhn 1971, 24.

¹⁹ Kuhn 1971, 22.

²⁰ Cf. Hempel 1965.

²¹ Charlton 1983, 98.

(This is not the right place to discuss the truth of these claims, but we will see below how they may be questioned, at least in respect to Aquinas's understanding of Aristotle, which seems to lead to an analysis of causation similar - in some respects - to that of the Empiricists).

Furthermore, the objection of a contemporary critic could be supported by other arguments. In the case of causal connections, causes and effects may be taken as being objectively related. The cause which pushes or pulls exerts a power on something else, which is consequently pushed or pulled: the existence of both pulling and been pulled is required in order for the causal link to exist. In the case of non-causal explanations, though, the existence of a real link between distinct existents is not warranted: the acceptability of an answer to a why-question relies on the interests, the knowledge and the prejudices of the person who has to accept it. One does not need to offer as an answer conditions which link necessarily the two *relata* in reality, as it is the case in causal explanations. Aquinas's examples of formal causes which we have mentioned above would suggest precisely this view: if we were asked why a group of men march together in the same direction we could offer a satisfying answer by saying that they are an army. But our interlocutor could be unsatisfied by this answer, for example because he lacks the concept *army*; or we could have some interest in concealing from him the fact that they are an army and satisfy his curiosity by telling him that they need to reach a common target. In conclusion, very different things could count as satisfying answers, depending on our knowledge and our interests. On the other hand, in the case of "real causation", what counts as a correct answer to a why-question is an objective matter, even if we could be satisfied by a wrong answer, due to our epistemic limits: the real answers depend on what, in Kuhn's words, pushes or pulls. In contemporary terms, the problem is

that statements of causality are extensional, whereas statements of causal explanation are intensional.

If this objection is right, the Aristotelian-Thomistic theory of causation faces a problem: how could what it regards as causal explanation be both real causation and explanation in a wide sense at the same time? Aquinas needs causation of all sorts to be metaphysically robust: formal, final and material causation are fundamental notions of his metaphysics, in discussing God's existence as well as in explaining cognition. How can they fulfil this task if they fail to be real causal links and are mere patterns of explanation depending on our concepts, interests, and epistemic standpoints?

Strangely, a solution to this problem may come from the consideration of some of Hume's arguments, which, as is well known, are traditionally considered destructive of any metaphysically robust interpretation of causation. His critical points started from the fact that, according to orthodox empiricist epistemology, there cannot be any ideas in the mind which were not derived from sense impressions or from reflection on sense impressions. Thus, according to Hume, if we look at any pair of objects which may be considered cause and effect, we

must not search for [an impression which produces an idea of causation] in any of the particular *qualities* of the objects; since, which-ever of these qualities I pitch on, I find some object, that is not possest of it, and yet falls under the denomination of cause or effect. And indeed there is nothing existent, either externally or internally, which is not to be consider'd either as a cause or an effect; 'tho 'tis plain there is no one quality, which universally belongs to all beings, and gives them a title to that denomination.²²

Since the idea of causation cannot be produced by sense impressions, according to Hume it has no ontological reality and it can be nothing else than the

²² Hume 1739, 75.

result of habits of our minds, which are used to noticing the contiguity and succession of certain objects.

Similar objects are always conjoined with similar. Of this we have experience. Suitably to this experience, therefore, we may define a cause to be *an object, followed by another, and where all the objects similar to the first are followed by objects similar to the second*. Or in other words *where, if the first object had not been, the second never had existed*.²³

Here Hume seems to make a mistake and to take as logically equivalent two different proposals which are not. When he states that a cause is an object of a type followed by an object of another type, under the condition that all objects of the first type are always followed by objects of the second type, he claims that a causal relation is a conditional relation, which exemplifies an universal law and where the cause is a *sufficient condition* of the effect. Subsequently, he tries to rephrase the same point "in other words" by claiming that if the cause had not existed, the effect never had existed. This, however, is equivalent to the claim that a cause is a *necessary condition* of its effect. David Lewis (1973) noted that Hume's first formulation gave rise to regularity analyses of causation, which attempt to explain causal relations as instantiations of laws of nature, whereas Hume's second proposal was developed into counterfactual analyses, such as his own. As we shall see, however, a third possibility may be suggested, which accommodates both of Hume's intuitions about the conditional dependence between cause and effect. At this stage, however, we do not need deal with the content of Hume's proposal, but only with the general aim of his attempt.

Although from an Empiricist standpoint causality has no real existence, Hume explains the importance of causation in our thinking by suggesting that what we designate as causes and their respective effects are related by a conditional relation,

²³ Hume 1748, 76.

which may not be the result of the laws of nature, but which imposes itself to our minds through habit. Hume's view may be summarised as follows: a) as a consequence of the empiricist assumptions, we cannot claim to have knowledge of real causal links; b) the idea of causation is the result of the recurrence of the succession of two objects, which may be described in conditional terms (the cause appears as the necessary and/or sufficient condition of the effect).

This criticism of the reality of causal links concerns all groups of Aristotelian causes, including the efficient causes, whose reality was accepted by modern post-Aristotelian physics. In a way, thus, besides suggesting that causation can be analysed in conditional terms, Hume nullifies the distinction of ontological value among the four Aristotelian causes, which was introduced by the distinction between causation and explanation. (Of course, this is not to claim that he questioned Hempel's views; but the first traces of the distinction supported by Hempel in the 20th century be found at least as far back as Galileo).

At this point, though, a follower of Aristotle and Aquinas could reject the empiricist assumptions on which Hume grounds his antirealist conclusions. Indeed, the plausibility of arguments to the best explanation casts several doubts on the empiricist assumption that all ideas of real things must derive, directly or through reflection, from the senses.²⁴ The existence of some entities could be warranted, even if they do not leave any impressions on the senses, and can only be known as conditions for the possibility of experience. Arguments of this sort, furthermore, are not unusual in Aristotle's framework. It is through an argument of this kind that he concludes that there are substances, which cannot be directly perceived, unlike the

²⁴ This line of objection to Hume's empiricism was openly advanced by Thomas Reid, for example in his essay "Of Power" (1792). Here, Reid claims that the idea of a necessary connection between causes and effects must be a first principle, required by our understanding of what is a power, which cannot be obtained from experience.

accidental qualities which inhere in them. A similar argument could be advanced with regard to the case of causal links: a casual link could be claimed to exist under certain conditions, even if it cannot be directly experienced. The obtaining of the conditions which are specified in an analysis of causation along Hume's lines, thus, could be best explained by the admission of an unperceived causal link underneath.

The same realist conclusions could be arrived to through a different, neo-Aristotelian route. Elisabeth Anscombe (1971), while famously contending that singular causal relations are not instantiations of universal causal laws, suggested that causal realism does not need to be supported through indirect approaches such as arguments to the best explanation. In her view, one can simply observe that an effect "comes from" its cause.²⁵ She challenges Hume's antirealism by pointing out that who denies that causal relations are directly perceivable on the grounds that cause and effect can be conceived as existing independently from each other, should consistently deny that motion can be perceived. Indeed, one could conceive any temporal stage of a moving objects as existing without the preceding or subsequent stages. No sensible theory of perception, however, would make a claim of this sort, nor Hume intends to deny the reality of local motion. Furthermore, several of our concepts, which are instantiated by objects of experience, such as *to cut*, *to push*, are cases of causal concepts. Also our concept of *cause*, therefore, must be instantiated by objects of experience. When the direct acquaintance with causation has been granted, however, Anscombe believes that a conditional analysis of causal facts can be developed nonetheless.

The follower of Aristotle and Aquinas who supports causal realism is not committed to a queer metaphysics, e.g. by introducing the existence of peculiar entities. Let us recall the distinction (mentioned above) between two ways in which a

causal connection could be real. The second, ontologically less demanding one, which is anyway sufficient for Aquinas's purposes, requires only that one can establish some conditions which link the real existence of a cause to that of an effect. Again, a satisfying attempt along the lines of Hume's failed effort to specify sufficient and/or necessary conditions of causation could do. Furthermore, if one can show that some suggested analyses apply equally well to efficient, material, formal and final causes, the ontological equality within the Aristotelian theory of causation would be assured.

Consequently, a neo-Aristotelian, or a neo-Thomist, may either endorse Anscombe's direct realism on causation, or, alternatively, may accept Hume's thesis that there is not any object of experience that is a causal relation. In either case, equality among Aristotelian causes, including efficient ones, would be granted. Even one who rejects direct causal realism, however, could reject antirealist consequences about causation, by suggesting the existence of mind-independent causal connections can be indirectly inferred from the occurrence of certain types of conditional dependence in our experience. If relevant kinds of conditional dependence exist between agents and patients, forms, ends and matter, then one could claim that all the groups of causes indicated by Aristotle are genuine kinds of causes. The antecedent of this conditional is in a plural form in order to account for the possibility that there may be more than one type of conditional relations, i.e. one for each group of causes, as far as they all warrant the same degree of necessity, in order to preserve the ontological equality among the four groups of causes allowed by the argument to the best explanation.

The strength of this line of argument rests on the possibility (for a contemporary supporter of Aquinas's views) to propose an analysis of the required

²⁵ Anscombe 1971, 92.

connections along the line of Hume's conditional analysis. One might wonder whether this would take him far from the actual Aristotelian-Thomistic theory of causation, and lead him to end up as a follower of Hume. Let us recall, in this connection, Charlton's thesis mentioned above according to which in Aristotle there is nothing along the lines of Hume's analysis of causation in terms of necessary and/or sufficient conditions. Although this claim may be true about Aristotle, it is certainly false in the case of Aquinas, who characterised causation as a relation in which "the effect would not exist, if the cause did not."²⁶ This is precisely Hume's second formulation of his failed attempt to offer a conditional analysis of causation.

Before looking more into Aquinas's theory of causation, we should say something about the problems of conditional analyses, and discuss some recent debates. The intent is not that of comparing or contrasting Aquinas's views with contemporary theories, but to consider whether a satisfying conditional analysis of causation, i.e. an analysis of causation of the sort which Aquinas and Hume seem to be after, can be offered. If this can be done, and if Aquinas's theory of causation has to be presented as an option in contemporary debates, we will need to consider whether Aquinas's proposals are compatible with the requirements of a satisfactory contemporary view. Roughly, Aquinas and Hume mean this:

$$(1) \quad \neg c \rightarrow \neg e$$

where c stands for a cause and e for an effect. (1) needs to be refined, since it is certainly inadequate as it stands: it may be the case that e could have occurred, even if c had not, for instance because it could have been caused by an alternative cause c^* . For example, let us imagine that a house is burning because of the breaking of a

²⁶ *ST*, I, 44, 1, ad 2: "quia effectus non esset, si causa non esset."

stove. Even if the stove had not broken, nevertheless the house might have ended up on fire because a candle fell on the floor. Let us imagine that the candle could have fallen exactly on the spot where some fire was in fact spread from the stove, so that the resulting burnings are identical in the two cases: from the moment of ignition on, they are the same burning.²⁷ The best attempt to offer a conditional analysis of causation which deals also with counterexamples of this sort, is probably John Mackie's (1965).²⁸

Mackie noted that, even if a cause may not be a necessary condition of an effect (in fact, that effect could have been caused by some other cause), it must be a necessary part of a conjunction of conditions which are, as a whole, sufficient for it. In the above example, the burning of the stove is necessary, together with the presence of oxygen in air, with the availability of combustible material in the surroundings, and so on. All these conditions are jointly sufficient for the effect, although they may not be jointly necessary. Indeed, some other conjunction of necessary conditions could have been sufficient for the same effect (for example the falling of a candle, together with the presence of oxygen, the availability of combustible material, and so on). The conjunctions of conditions which are sufficient for the effect are not composed of positive conditions only, as in the above examples, but they also contain negative conditions. For example, a negative condition could be that there are no water sprinklers which could prevent the spreading of the fire. It is also necessary that other possibly concurring causes (like the falling of the candle,

²⁷ Of course, this presupposes a theory of the identity of objects which does not take its origin as an essential feature of an individual, contrary to Kripke's point of view (1980).

²⁸ The problem of preemption, as the above mentioned issue is widely known after Lewis (1973), is normally considered a case to abandon the conditional analysis of causation in favour of other accounts. Yablo (2002), for example, suggests that his theory of the *de facto* dependence (according to which an effect depends *de facto* on its cause, in the sense that the obtaining "natural" conditions make the effect in need of the cause) offers the best available solution to the problem of the preemption. Nonetheless, we will consider the solutions available to a supporter of a conditional

when the stove is the cause of the fire) have no causal role, otherwise there would be a problem of overdetermination of causation.²⁹ Conditions which are redundant or make no difference should not be part of a conjunction of conditions which is sufficient for the effect either. When all these requirements are satisfied, the conjunction of conditions which is sufficient for the effect can be called a *minimal sufficient condition*.³⁰

As mentioned, a minimal sufficient condition may not be necessary for the occurrence of the effect. For each occurring event there could a (possibly infinite) set of minimal sufficient conditions, each of which is a conjunction of (possibly infinite) necessary conjuncts; the disjunction of all these minimal sufficient conditions would be necessary for the effect:

$$(2) \quad (c1 \ \& \ c2 \ \& \ \dots \neg c3 \ \& \ c4 \ \& \ \dots \neg c1^* \dots) \vee (c1^* \ \& \ c2^* \ \& \ \dots \neg c3 \ \& \ c4 \ \& \ \dots \neg c1) \vee \dots \leftrightarrow e$$

According to Mackie each of the conditions cn may be a cause. A cause, therefore, may be an *insufficient* but *necessary* part of a condition which is *unnecessary* but *sufficient*, or, in other words, a cause may be an *INUS* condition. He uses the following notation. Let A be the cause of P , and X a conjunction of conditions such that the conjunction AX is a minimal sufficient condition of P [e.g. $(c1 \ \& \ c2 \ \& \ \dots \neg c3 \ \& \ c4 \ \& \ \dots \neg c1^* \dots)$ in (2)]. Let also Y be the disjunction of all the other minimal conditions, other than AX , which are sufficient for P . It may be the case that AX is the

analysis, since Aquinas seems keen to endorse an analysis of that kind and our aim is to consider the plausibility of Aquinas's views on which rests his theory of formal causation.

²⁹ Mackie deals with the problem of overdetermination by appealing to what he considers a common sense intuition, i.e. the idea that no individual cause can be considered sufficient for the effect, when it concurs to produce it jointly with other causes (cf. Mackie 1965, 44).

³⁰ Mackie 1965, 36.

only minimal sufficient condition of *P*, or even that *A* itself is the only minimal sufficient condition. In the former case, *A* would be a *necessary* condition, and in the latter a *necessary and sufficient* condition of *P*. This is why, Mackie claims that a cause is *at least* an *INUS* condition of the effect: it could be a necessary condition (when there are no other alternative causes of the effect) or a necessary and sufficient condition (when there are no other alternative causes *and* it causes the effect without the need that other conditions obtain), but, even if there are other possible causes and other favourable conditions are needed, it is an *INUS* condition. Therefore, "*A* caused *P*" means at least, or also,³¹ that

- (i) *A* is at least an *INUS* condition of *P* - that is, there is a necessary and sufficient condition of *P* which has one of these forms: (*AX* or *Y*), (*A* or *Y*), *AX*, *A*.
- (ii) *A* was present in the occasion in question.
- (iii) The factors represented by the '*X*', if any, in the formula for the necessary and sufficient condition were present on the occasion in question.
- (iv) Every disjunct in '*Y*' which does not contain '*A*' as a conjunct was absent on the occasion in question.³²

Mackie adds a refinement. What makes *A* a *cause*, and differentiates it from all the other conditions included in *X*, i.e. the other conjuncts of the minimal sufficient condition of which *A* is also a part? His answer involves the notion of a *causal field*

³¹ This limitation is due to the fact that this is not supposed to be a reductive definition of "*A* caused *P*": there may be more to the meaning of that expression than what is specified here.

³² (i)-(iv) are taken literally from Mackie (1965, 37). He thus justifies (iv): "Ass a rule, this [(iv)] means that whatever '*Y*' represents was absent in this occasion. If '*Y*' represents a single conjunction of factors, then it was absent if at least one of its conjuncts was absent; if it represents a disjunction, then it was absent if each of its disjuncts was absent. But we do not wish to exclude the possibility that '*Y*' should be, or contain as a disjunct, a conjunction one of whose conjuncts is *A* or require that *this* conjunct should have been absent" (Mackie 1965, 37). The reason for not wanting this is that *A* could

(1965, 39-40). He does not define this, but elucidates it through some examples. One of these concerns the question "what caused this man's skin cancer?", which may mean at least two different things. It may mean "why did this man develop skin cancer now when he did not develop it before?" or "why did this man develop skin cancer, whereas other men who were also exposed to radiation did not?" In the first case the causal field is "the career of this man: it is within this that we are seeking a difference between the time when the skin cancer developed and times when it did not."³³ In the second case, "the causal field is the class of men thus exposed to radiation and what is the cause in relation to one field, may not be the cause in relation to the other."³⁴ It seems that which reading one intends, and consequently what is the cause, depends on the context. The causal field, therefore, seems to be the region of reality, which the context determines as causal (i.e., as valuable options to replace *A*), as opposed as merely (at least *INUS*) conditional. Mackie suggests a consequent readjustment of (i):

- (ia) *A* is at least an *INUS* condition of *P* in the field *F* - that is, there is a condition which, given the presence of whatever features characterise *F* throughout, is necessary and sufficient for *P*, and which is one of the forms: (*AX* or *Y*), (*A* or *Y*), *AX*, *A*. (1965, 41).

Because of the role of the causal field in (ia), causation is an epistemic notion, i.e. it concerns the way in which our knowledge is built and obtained, and it entails the idea, already discussed above, that it is a sort of (or somehow dependent on) explanation. The interesting thing about Mackie's proposal is that it offers a

cause *P* jointly either with *X* or with a *Z*, such that *AZ* belongs to *Y*. In some cases, it could be possible that *X* and *Z* obtain at the same time. When this is the case, and *A* causes *P*, both *AX* and *AZ* obtain.

³³ Mackie, 1965, 40.

³⁴ *Ivi.*

conditional analysis of what happens at the metaphysical level, through the idea that any effect is sufficiently and necessarily dependent on a disjunction of sufficient conjunctions of *INUS* condition, but then it leaves it open to our epistemic standpoint and to the context (i.e., to our interests, desires, and needs) to decide which of the *INUS* conditions within each minimal sufficient condition are causes. The kind of causation advocated by modern physics is no less of an epistemic notion than traditional Aristotelian explanatory causes. Conversely, if traditional Aristotelian causes can be shown to satisfy the requirements for being *INUS* conditions (and we shall see that they can), they are no less metaphysically robust and objective than the causes used by physics.

A problem with Mackie's proposal, however, is that no matter how precisely we specify the causal field, there is always the possibility that there are *INUS* conditions which cannot qualify as causes. For example, there could be an entity (fact, event, property or whatever) *o1* which necessarily coexists with another entity (fact, event, property or whatever) *o2*, for example because *o1* supervenes on *o2*; if *o2* satisfies (2) as one of the *cn*'s, so does *o1*, since they necessarily coexist. Thus, they are both *INUS* conditions of the effect. But it may be the case that *o1* fails to have any causal role, whatever the causal field may be. This is the reason why, while introducing (ia)-(iv), it was said that those conditions specify what an *INUS* condition *at least* (or *also*) is: they explain only *part of the meaning* of '*A* caused *P*', since there is more to causation than what they mention.

Note that this entails that there are two *at least*-restrictions on *INUS* conditions which are causes. First, a cause is *at least* an *INUS* condition in the sense that it may even be a necessary, or necessary and sufficient condition of the effect. Second, a cause is *at least* a condition which is at least *INUS*, since the meaning of '*A* caused *B*'

is only partially captured by (ia)-(iv). In other words, being a cause is being a condition which is at least *INUS* plus something else. For brevity, we can say that a cause is *also an at least INUS condition*, where 'also' fulfils the role of the second *at least* restriction, and 'at least' fulfils the role of the first *at least* restriction. In other words, we can say that a cause is *at least an INUS condition*, since it could be a necessary or necessary and sufficient condition, and that it is *also* at least an *INUS* condition, since it is something more than that, given the fact that there may be conditions which are at least *INUS* but fail to be causes, whatever if the causal field.

In conclusion, it seems that a satisfying conditional analysis of causation must be consistent with the idea that causes are at least *INUS* conditions, *and* possibly should have the resources to mark the difference between causes and other non-causal at least *INUS* conditions, i.e. to explain what a cause is also, besides being at least an *INUS* condition. Since Aquinas seems to favour a conditional analysis of causation, when he suggests a reading of causal relations like (1), and since Mackie's analysis offers a deep and detailed account of causation in conditional terms, Aquinas's theory is plausible and acceptable to the extent that it is capable of satisfying Mackie's requirements and, possibly, to offer a criterion to differentiate causes from other non-causal at least *INUS* conditions. In what follows, a key of interpretation of Aquinas's views will be suggested that highlights how it could meet these requisites. Before entering into the details of Aquinas's theory, however, a possible objection to this approach has to be considered.

One could contend that the fact that Aquinas supports (1) does not commit him necessarily to a conditional analysis of causation along the lines suggested by Mackie, since (1) is also compatible with a counterfactual analysis such as David Lewis's (1973). Two replies can be offered to this. First, Lewis's proposal is so

highly contentious that it can hardly be seen as dictating requirements that any conditional approach along the lines of (1) should satisfy. Second, Lewis's theory is grounded on metaphysical assumptions extremely distant from Aquinas's; desiderata resulting from his theory, therefore, are set in a framework which Aquinas could not accept in the first place. Before considering each of these points more closely, let us remember that, according to Lewis, '*A* causes *B*' is implied by the counterfactual dependence of *B* from *A*, which is thus analysed: if *A* were true, then *B* would be true *if and only if* there is a possible world in which *A* and *B* are true that is more similar to the actual world than any possible world in which *A* is true and *B* is false. Furthermore, the similarity between different possible worlds depends on the degree to which they share the same laws of nature and factual truths.

Concerning the first reply, one need to consider that Lewis's proposal had to face several objections, and, consequently, it is now highly dubious and problematic. Let us consider just a few examples. Jaegwon Kim pointed out that there are counterexamples of Lewis's theory, i.e. counterfactuals which clearly do not involve a causal relation, such as, for example, 'if George had not been born in 1950, he would not have reached the age of 21 in 1971' (Kim 1973, 206). Furthermore, Kim notes that Lewis fails to explain how changes of laws of nature and factual diversities across possible worlds determine similarity and diversity among possible worlds. Paul Horwich (1987), added other objections to the two by Kim. Lewis's theory, according to Horwich, would have to face the problems of over-determination and pre-emption, and would fail to explain the direction of causation. Jonathan Bennett (1987) also criticised all attempts to explain causation through counterfactuals, since they rest on the assumption that some counterfactuals hold true in all possible worlds close to ours. In order to secure the constancy of truth values of counterfactuals in

close possible worlds, on the other hand, we must be able to re-identify in different possible worlds the events which are related in them. Some counterexamples, however, show that the re-identification of events related in some counterfactuals in worlds in which those counterfactual must maintain the same truth values, can be carried out only at the cost of accepting views on the essence of events which do not square with our conceptual framework. For example, the statement 'if that hand-wave had not occurred, the auctioneer wouldn't have thought you were bidding' is true both in worlds where the hand-wave referred to was a right-hand-wave and in worlds where it was a left-hand-wave and this rises the question whether "my right-handed wave was *essentially* right-handed."³⁵ Bennett's contention is that it was, given the way in which we identify events. In conclusion, it seems that the counterfactual analysis is too problematic to be taken as highlighting features of causation which any conditional explanation of causation should account for. This is not to say that Mackie's proposal is indisputable (indeed, it needs to be refined, and we will consider some improvements in next chapter), but it does offer a starting point which has proven to be helpful and acceptable for further developments.³⁶

The second reply has to do with the fact that Aquinas's views are incompatible with some essential assumption of the counterfactual theory of causation. As we have seen, in Lewis's view, counterfactual dependence has to be explained in the terms of similarity between the actual world and other existing possible worlds. This is incompatible with Aquinas's views for two reasons. First, Lewis's metaphysics requires a distinction between actuality and existence: all possible worlds exist, but only our world is actual. As we have seen, on the other hand, in Aquinas's metaphysics, actuality is existence. This purports that no distinction can be drawn

³⁵ Bennett 1987, 219.

³⁶ Cf., for example, Cartwright (1989) and Pearl (2000, 313 and ff).

between the actual world and other possible ones. Second, according to Aquinas all possibilities are rooted in actualities, i.e. in ways the world is. Hence, the thought that there are worlds which are possible but independent from the actual one would be incoherent. In both cases, however, Aquinas's view does not entail that counterfactual thoughts are impossible, but only that the range of variations from actuality depends strictly on actual laws and features of the world. Whatever requirements on causation the counterfactual view entails, then, they cannot be expected to constrain an analysis carried on along Aquinas's lines.

In conclusion, Aquinas seems to think that causes can be analysed in conditional terms. From contemporary analyses, such as Mackie's, we know what an acceptable conditional analysis of causation requires: causes must at least satisfy Mackie's description, i.e. they must also be either necessary and sufficient, or necessary, or *INUS* conditions (or, in other words, they must *also be at least INUS conditions*), which are present in the occasion together with whatever other conditions constitute a minimal sufficient condition, and under the condition that no other minimal sufficient condition produced the effect. Furthermore, what suitable condition constitutes a cause depends on the causal field. If Aquinas's theory has to be acceptable, one needs to show that the causes advocated by him can be at least *INUS* conditions, and that he has the resources to explain the constraints of the causal field. (When a theory can satisfy these requirements, it can trivially satisfy the other as well, i.e. the actual presence of the causal condition in events of causation, the availability of the other relevant necessary conditions, and the absence of causal competitors.) Let us now turn to some of the details of the theory.

3.3 The Modes of Causation

Right after defining the four groups (or *species*) of causes, Aristotle goes on to say more about the ways (or *modes*) in which something may be a cause, and Aquinas develops those claims in his own ways.³⁷

According to a first distinction, "among causes of the same species, some are prior and some are posterior."³⁸ A modern reader would easily understand this as a distinction depending on the order in causal chains. Aristotle's examples, though, are disappointing: health has a *doctor* as a proximate cause, and a *man of skill*, the concept of which is the genus of the concept *doctor*, as a remote cause. According to a second example, the double is a proximate cause of an octave, and number is a remote one, since the concept *number* is the genus of the concept *double*.

Aquinas's commentary is reassuring: between *ME* and *PE* he offers four readings of the prior/posterior distinction. The first two readings are suggested in *PE*, where he notes that Aristotle's distinction can be taken either in the sense that there is a share of predication (*communitatem predicationis*) between prior and posterior cause, or in the sense that there is a share of causal power (*communitatem causalitatis*) between them.³⁹ Aristotle's example fits in the first case, whereas the second case accommodates Aquinas's views on the hierarchical structure of the world. Let us begin from the latter. According to Aquinas, forms are hierarchically

³⁷ *Physics*, II, 3, 195a 29 - b 30; *Metaphysics*, V, 2, 1013 b 29 - 1014 a 25. The difference between a distinction of causes into *species* and one into *modes* is explained by Aquinas: "Causes are distinguished in to [*species*] and into *modes*. For the distinction into *species* is based on different formal aspects of causality, and is equivalently a division based on essential differences, which constitute species. But the division of causes into modes is based on the different relationships between causes and things caused, and therefore pertains to those causes which have the same formal aspect of causality" (*ME*, V, 3, 783, the translation was revised: "Est autem distinctio causae per species et per modos. Nam distinctio per species est penes diversas rationes causandi; et ideo est quasi divisio per differentias essentielles species constituentes. Divisio autem per modos est penes diversas habitudines causae ad causatum. Et ideo est in his quae habent eandem rationem causandi").

³⁸ *Physics*, II, 3, 195 a 30.

structured according to the degree of their independence from matter, but the less constrained by matter something is, the more effectively it can act on different things of different sorts, and, thus, the prior it is in the causal order.⁴⁰ This latter distinction, seems to be related to the problem of vertical causation, since it involves a hierarchical outlook or reality, and so it can be ignored for our purposes. Furthermore, it is hard to see what Aquinas means by it, and how it could be supported. The former interpretation of the distinction, however, may interest us, but is quite problematic, and needs to be discussed.

Let us suppose that Joe healed Bill. Joe is a doctor and, thus, a professional man. Thus, according to Aquinas, both a doctor and a professional man are causes of Bill's recovery. The concept *professional man* is a higher-level concept than the concept *doctor*. All doctors are professional men, but not all professional men are doctors, since there are lawyers, accountants, etc. When Aquinas says that a doctor is a cause of a recovery, with 'doctor' he may refer to one of three things: a) to an individual who falls under the concept *doctor*; b) to the individual essence (or form) of an accident, i.e. an instantiation of a quality, which belongs to a particular individual who falls under a relevant concept: in this case it would be the *doctorness* of Joe (just as one might think of the individualised case of whiteness which is the whiteness of this page); c) to the concept *doctor*. It is improbable that Aquinas means a), since according to a) there would be an only cause, i.e. the individual falling under both concepts, but Aquinas says that there are two causes, a prior one and a posterior one.⁴¹ A similar problem arises in the case of b): the form of an accident is

³⁹ *PE*, II, 6, 189.

⁴⁰ The problem of the intelligibility of claims about a hierarchy of forms in Aquinas is discussed in De Anna 2000b.

⁴¹ About this point, it must be noted that Aquinas is inconsistent. This claim is quite explicit in *PE* ("one cause is said to be prior to another"; *PE*, II, 6, 188: "dicitur una causa prior altera"), but it is denied in *ME*: "[the distinction applies] when *the cause is one*, but is considered according to the sequence which reason sets up between the universal and the particular; for the universal is naturally

the principle of organisation because of which an individual has a quality which makes it fall under a certain concept; the structuring principle because of which an individual may be said to be a doctor, though, is the same one due to which that individual may fall under both concepts *doctor* and *professional man*; again, the cause would be one (the structuring principle), but Aquinas is referring to *two different causes*. c) is the only option left. How concepts may be prior to each other, when a theory of the hierarchy of concepts on the line of Aristotle's views on species and genera is in place, may not be a problem. A natural path to follow for a contemporary analysis of such a relation could start from the consideration that *F* is prior to *G* if:

$$(3) \forall x (Gx \rightarrow Fx) \ \& \ \exists x (Fx \ \& \ \neg Gx)$$

Note that (3) is a necessary condition, but it is not sufficient, since there are cases in which *F* and *G* fail to have the right species-genus relation., even if they satisfy (3). For example it is true that all cats are hairy and that there are hairy things which are not cats, but *hairy* is not a genus of *cat*. However, this is not the path followed by Aquinas. Probably we can grant him the canonical definition of the species-genus relation: a definition of a species is constituted by the definition of the higher-level genus plus a term referring to a differentiating characteristic. Then, Aquinas needs only to show that a concept can figure as one of the causes in the first member of (2), i.e. that it may be an (at least) *INUS* condition, and c) offers a plausible reading of the distinction.

prior and the particular subsequent" (*ME*, V, 3, 785: "in una et eadem causa numero secundum ordinem rationis qui est inter universale et particulare. Nam universale naturaliter est prius, particulare posterius"). The reference to universals confirms the correctness of option c).

The third and the fourth readings of Aristotle's distinction between prior and posterior causes are presented in *ME*. The third one is a variant of the first: as a higher-level universal is a cause prior to a lower-level one, any universal is a cause prior to an individual which instantiates it.

In the last reading of the distinction, Aquinas interprets Aristotle exactly in the way which a modern reader would find more natural:

causes are prior or subsequent [...] when there are many distinct causes which are related to each other, one of which is primary and remote, and the another secondary and proximate (as in the case of efficient causes man generates man as a proximate and subsequent cause, but the sun as a prior and remote cause).⁴²

Here, Aquinas is clearly thinking about a causal chain and claims that *c1* is prior to *c2* if and only if *c2* is closer than *c1* to the effect in the causal process.

One may wonder why, in commenting on Aristotle's definition of 'cause' (see above 3.1), Aquinas interpreted 'primary cause' as referring to the proximate cause, and now takes a prior cause to be the more remote. This fact is easily explained by the notorious distinction between epistemic and ontological priority that he borrowed from Aristotle. Things which are prior for us, i.e. on an epistemic level, are posterior in nature, i.e. on an ontological level; assuming that we have direct knowledge of an effect and inferential knowledge of its causes, the element of the causal chain which immediately caused the effect is *priori* for us, although it is last in nature, i.e. in the causal chain. *Vice versa*, things which are prior in nature, i.e. in the order of causal series, are *p posterior* for us. Again assuming that we have direct knowledge of the effect and inferential knowledge of its causes, the earliest an element of a causal chain comes, the further it is in our inferential inquiry. Consistently with this

⁴² *ME*, V, 3, 785: "Dicitur enim una prior, et altera posterior. [...] in causis diversis numero adinvicem ordinatis, quarum una est prima et remota, et alia secunda et propinqua; sicut in causis efficientibus homo generat hominem ut causa propinqua et posterior, sol autem ut causa prior et remota."

distinction, while discussing what causal explanations are, Aquinas was thinking about epistemic priority. Now he is analysing the metaphysics of causation and so he refers to metaphysical priority.

The second distinction between modes of causation introduced by Aristotle is between proper (*per se*) and accidental causes (*per accidens*):

Polycletus is an accidental cause of a statue, while the sculptor is a *per se* cause. For Polycletus is a cause of statue insofar as he happens to be a sculptor.⁴³

It is important to note that this distinction does not correspond to the distinction between substances and accidents; in the example, 'Polycletus' is a better candidate than 'sculptor' to refer to the substance, i.e. the individual man. Being a sculptor, after all, is just an accident, not an essential characteristic, for a man. The reason because of which a cause is accidental is due to its role in the causal process; the existence of a statue depends essentially on the existence of an individual who sculpted it, but it is not essential who that individual was. Even if Polycletus had not existed, the statue could have nonetheless existed, since somebody else could have sculpted it.⁴⁴

The prior/posterior distinction applies also to accidental causes; Aquinas gives an example which fits in the first and third readings of that distinction: The species and the genera to which an accidental cause belongs are also accidental causes. For example, since Polycletus is an accidental cause of the statue, and he is a human and an animal, humanity and animality will also be accidental causes of the statue.⁴⁵ It can be suggested, though, that accidental causes can be prior and posterior also in the fourth sense: if Polycletus is an accidental cause of the statue, so is his father; the

⁴³ *PE*, II, 6, 190: "sicut causa statuae per accidens quidem est Polycletus, per se autem causa statuae est faciens statuem: Polycletus enim est causa statuae inquantum accidit ei esse statuem facientem."

⁴⁴ This claim is true under the assumption that, contrary to Kripke's contention (1980), its origin is not an identifying feature of a thing. Cf. note 62 below.

⁴⁵ Cf., *Ibidem*.

father, though, is a prior accidental cause because he is further away from the effect in the causal chain.

Aquinas introduces a further distinction between accidental causes: "some [...] are proximate and some remote."⁴⁶ He refers back to a parallelism with proximity and remoteness of proper causes, but it is not clear what he is thinking about. A possibility would be that he has in his mind the prior/posterior distinction in the order of causal series, i.e. the point which has just been made at the end of the previous paragraph. In that case, though, it is not clear why he introduces this distinction right after discussing the prior/posterior distinction. Furthermore, the intelligibility of this distinction is complicated by the fact that he explains it quite differently in *ME* and in *PE*. In *ME*, he seems to say that accidental causes which are substances are more proximate than accidental causes which are accidents:

Polycletus is a more proximate cause of a statue than what is white or what is musical [, then all being accidental causes]. For an accidental mode of predication is more remote when an accident is predicated of an accident than when an accident is predicated of a subject. For one accident is predicated of another only because both are predicated of a subject. Hence something pertaining to an accident is predicated of another, as something pertaining to a builder is predicated to a musician, this mode of predication is more remote than one in which something is predicated of the subject of an accident, as when something pertaining to a builder is predicated of Polyclitus.⁴⁷

A parallel criterion, suggested in *PE*, seems to be quite different, since it concerns the mutual relation between accidental causes which happen to be accidents, rather than their inherence in an accidental cause which is a substance:

if it happens that the person who sculpted a statue is white and musical, the musical is a more proximate cause, since musicality and the skill to sculpt are

⁴⁶ *ME*, V, 3, 788: "causarum per se quaedam sunt propinquae, quaedam remotae."

⁴⁷ *Ibidem.*: "Polycletus est causa statuae magis propinqua quam album et musicum. Magis enim remotus modus praedicationis per accidens est, cum accidens praedicatur de accidente, quam cum accidens praedicatur de subiecto. Accidens enim non praedicatur de accidente, nisi quia ambo praedicantur de subiecto. Unde magis remotum est ut attribuaturs uni accidenti quod est alterius, sicut musico quod est aedificatoris, quam quod attribuaturs subiecto quod est accidentis, sicut Polycleto quod est aedificatoris."

in the same subject and because of the same thing, namely the soul; whiteness, instead, is because of the body.⁴⁸

In conclusion, it is hard to see what this distinction amounts to and how it is different from more familiar cases of priority-difference among accidental causes.

About accidental causes, Aquinas also notes that there are two ways in which a cause may be said to be accidental, i.e. from the view point of the cause and from that of the effect:

from the view-point of the cause, because whatever is accidental to a cause is itself called an accidental cause, for example when we say that something white is the cause of the house. In another way from the view-point of the effect, i.e., inasmuch as a thing is said to be an accidental cause of something else because it is accidental to the proper effect.⁴⁹

In the first case, the accidental cause is just a characteristic of whatever the proper cause is; a feature which the proper cause happens to have, but which has no direct causal role. For example, the white man may be the cause of the house, but not *qua* white, only *qua* builder. Whiteness as such is not directly responsible for the effect, even though it is a condition of it, since the builder needs to be coloured in some way, and, thus, without any colour there could not be any builder. Calling these causes indirect may be justified by the fact that they are causes of the causes of the effect.

From the view-point of the effect, instead, there are causes which are not essential, i.e. are accidental, but still have some direct role to play in the production of the effect. They do not contribute by causing one of the causes of the effect (as in the previous case) but they are required in order to set the conditions which make the

⁴⁸ *PE*, II, 6, 190, (my translation): "si statuam facienti accadat esse album et musicum, musicum propinquius est, quia est in eodem subiecto et secundum idem, scilicet secundum animam, in qua est musica et ars statuæ factiva; album autem inest secundum corpus."

actual causing possible. According to Aquinas causes can be accidental from the view-point of the effect in three different ways: a) "the thing has a necessary connection with the effect. Thus that which removes an obstacle is said to be a mover accidentally"; Aquinas seems to refer to an *INUS* condition of the effect, which lacks some characteristic to be a proper cause; for example, the absence of water sprinklers in the example of the fire mentioned in the previous section would be accidental in this sense. b) "Something is accidental to the proper effect when the accident is connected with the effect neither necessarily nor in the majority of cases but seldom. [...] It is in this way that fortune and chance are said to be accidental causes;" e.g., the fact that I go to the market may be the cause of my meeting a friend who I did not expect to be there; neither all trips to the market nor the majority of them may have such unexpected results, but in that circumstance it happened. This is the sense in which we may say that an event was caused, but totally accidentally, i.e. non-intentionally. c) "In a third way things are accidental to the effect when they have no connection except perhaps in the mind, as when someone says that he is the cause of an earthquake because an earthquake took place when he entered the house;"⁵⁰ in this case the relation between alleged cause and effect can only be *post quem*, due to someone's mistakenly taking the truth of both the sentences describing the cause and that describing the effect as a mark of the two events being causally related.

⁴⁹ *ME*, V, 3, 789: "ex parte causae; quia scilicet illud quod accidit causae, dicitur causa per accidens, sicut si album dicatur causa domus. Alio modo ex parte effectus; ut scilicet aliquid dicatur causa per accidens alicuius, quod accidit ei quod est effectus per se."

⁵⁰ All these three quotations are from *ibidem*: "Quod quidem potest esse tripliciter. Uno modo, quia habet ordinem necessarium ad effectum, sicut remotio impedimenti habet ordinem necessarium ad effectum. Unde removens prohibens dicitur movens per accidens; sive illud accidens sit contrarium, sicut cholera prohibet frigiditatem, unde scamonaea dicitur infrigidare per accidens, non quia causet frigiditatem sed quia tollit impedimentum frigiditatis, quod est ei contrarium, scilicet choleram: sive etiam si non sit contrarium, sicut columna impedit motum lapidis, unde removens columnam dicitur per accidens movere lapidem superpositum alio modo, quando accidens habet ordinem ad effectum, non tamen necessarium, nec ut in pluribus, sed ut in paucioribus, sicut inventio thesauri ad fossionem in terra. Et hoc modo fortuna et casus dicuntur causae per accidens. Tertio, quando nullum ordinem habent, nisi forte secundum existimationem; sicut si aliquis dicat se esse causam terraemotus, quia eo intrante domum accidit terraemotus."

c) seems just to mean that in a sense 'accidental cause' may be used to refer to events which are claimed to have a causal role but which, in fact, do not. On the other hand, *prima facie*, b) may seem obscure; however, it could be reduced to a), as it will be clear after the discussion of necessity in next section. Chance, according to Aquinas and Aristotle, is not metaphysically robust, but it is just the production of an effect which was not intended by an agent, because of the interference of some unexpected or unconsidered factor, or which did not result according to the normal development of natural things. In reality, fortune is not a cause at all. a), finally, seems to be the real explanation of what accidental causes from the view-point of the effect are: *they have a direct and active role in producing the effect, but they lack a kind of essentiality which belongs to a proper cause*. What this is will be discussed in next chapter, but it can be anticipated that proper causes are those which give the effect its form, its matter, its end, and which act efficiently in producing it.

The third distinction of modes of causation suggested by Aristotle is between simple and composite causes. Aquinas explains:

a cause is said to be simple when, for example, in the case of a statue, the proper cause alone is considered, as a sculptor, or when an accidental cause alone is considered, as Polycletus. But a cause is composite when both are taken together, for example, when we say that the cause of a statue is the sculptor Polycletus.⁵¹

This can be understood as the claim that different degrees of completeness are possible, according to the number of *INUS* conditions constituting a minimal sufficient condition which are specified. Aquinas warns us not to confuse this Aristotelian distinction between complete and simple causes with another one, that between partial and complete causes:

⁵¹ *ME*, V, 3, 792: "simplex causa dicatur secundum quod accipitur causa statuæ per se totum ut statuæ factor, sive per accidens tantum, scilicet Polycletus. Composita autem secundum quod utrumque simul accipitur, ut dicatur causa statuæ Polycletus statuæ factor."

there is moreover another way in which causes are said to be composite, i.e., when several causes act together to produce one effect, for example, when many men act together in order to row a boat, or when many stones combine in order to constitute the matter of a house. But [Aristotle] omits the latter way because no one of these things taken in itself is the cause, but a part of a cause.⁵²

It must be noted that Aquinas is imprecise, since he first speaks of "several causes acting together", and then denies that they are causes, since each of them is just "a part of cause." This detail aside, though, this passage is important for two reasons. First, Aquinas appears to be aware of the distinction between partial and complete causes, which is something missing from Aristotle. Second, he gives a plausible interpretation of Aristotle, according to which his discussion of modes concerns only complete causes.

The fourth and last distinction between modes of causation introduced by Aristotle is between potential and actual causes and effects. A builder, for example, is an actual cause of a house only as far as he is actually building one, otherwise he is just a potential cause. A builder who is not building but potentially may, though, is not just a non-builder, since potency, as Aquinas says, "designates his habit or office", i.e. his skill.⁵³ In other words, a builder who is not building is not just like a man who does not have the skill to build: he has the actuality of that skill, even though its utilisation is only potential. These two modes of causality, potentiality and actuality, apply to all the other three pairs: prior and posterior causes, proper and accidental causes, simple and composite causes can all be either potential or actual.

A last remark about the modes of causation due to Aristotle is that they hold both for causes and for their effects. Aquinas comments:

⁵² *Idem*, 793: "Est autem alius modus quo causae possunt dici compositae, secundum quod plures causae concurrunt ad unius rei constitutionem; sicut plures homines ad trahendum navem, vel plures lapides, ut sint materia domus. Sed hoc praeternisit, quia nullum illorum est causa, sed pars causae."

⁵³ *Idem*, 790: "Hoc enim sonat habitum vel officium."

for effects, whether particular or universal, can be divided into prior or subsequent, as a sculptor may be called the cause of this statue, which is subsequent; or of statue which is more universal and prior; or of an image, which is still more universal. And similarly, something is the causal form of this particular bronze; or of bronze, which is more universal; or of matter which is still more universal. The same thing may be said of accidental effects, i.e., of things produced by accident. For a sculptor who is the cause of the statue is also the cause of the heaviness, whiteness or redness which are in it as accidents from the matter and are not caused by this agent.⁵⁴

The claims about universals being effects may seem implausible. One can reasonably accept that they may be causes, for example because they may figure as conditions of a specified kind for the existence of objects. But it may be hard to see how a universal can be brought into existence. Maybe because an instance of it comes into existence? If so, how can the *universal* be such? Perhaps Aquinas would answer positively to the first question and, in order to meet the second one, would bring into the picture his thesis of *universalia post res*, discussed above in chapter one. According to Aquinas, universals are structuring principles, or patterns of organisation which only exist, *qua universals*, in the mind consequent upon being abstracted from the things which they structure. Different instances of one and the same pattern may exist in different things, and thus that pattern is universal, but it can exist separately as a universal only in a mind which abstracted it. Given this view, Aquinas can plausibly hold that if an object is an effect, also the universal of which its structure is an instance is an effect, for two reasons. First, the instantiation of that universal structuring a certain object is caused with the object. Second, the presence of that universal in a mind is caused by the abstractive process and,

⁵⁴ *Idem*, 791: "Potest enim dividi causatum per prius et posterius sive particulare et universale; sicut si dicamus, quod statuæ factor est causa huius statuæ, quod est posterius, aut statuæ, quod est universalius et prius, aut imaginis, quod est adhuc universalius. Et similiter aliquid est causa formalis huius aëris, aut aëris, quod est universalius, aut materiae, quod est adhuc universalius. Et similiter potest dici in accidentalibus, scilicet in effectibus per accidens. Nam statuæ factor qui est causa statuæ, est etiam causa gravis vel albi vel rubei quæ accidunt ex parte materiae, et non sunt ab hoc agente causata."

ultimately, by the objects from which it is abstracted. (cfr. fig. 2 for a recapitulation of the modes of causation).

		MODES OF CAUSATION							
CAUSES (efficient, final, material, formal)	EFFECTS	prior VS posterior			per se VS accidental		simple VS composite	Complete VS incomplete	potential VS actual
		hierarchy	univ.-individ.	causal chain	view-point of the cause	view-point of the effect			

Fig. 2: the modes of causation

I would like to suggest that Aquinas's distinction among several modes of causation offers the possibility to systemise the features of causation for which Mackie introduced the notion of causal field. In fact, the context and the question which one wants to answer determine what kind of cause something is (i.e. in what modality it is a cause).

In order to be divided as prior or posterior, in the first place, causes have to be distinguished from other background conditions, and this depends also on the explanatory context. When I ask ‘who made that statue?’, for example, I am already constraining my inquiry on the conditions which made the creation of that statue possible in general, to the person who sculpted it. The causal field is thus limited to a sculptor (prior cause), and to things which caused him (his humanity, his parents, and so on: posterior causes); whereas several other conditions which had to obtain in order for the statue to be created (for example some man had to quarry a piece of

marble, and some other to carry it to the art studio) become just part of the explanatory background.

What counts as accidental cause and what counts as a *per se* cause, also depends on the explanatory context; the event of a statue having been created, for example, may raise the issue concerning why it was a statue *qua* statue which was created (and not a table), and thus the creator being a sculptor (and not a carpenter) is a *per se* cause; the fact that the sculptor was a man, in that case, is merely accidental. On the other hand, had the question concerned the fact that the statue was a work of art, not the carving produced by sand carried by the wind, then the fact that it was created by a man, i.e. an intentional agent, would have been a *per se* cause, and the fact that that man was white accidental.

Similarly, whether a cause is composite or simple depends on what answer one expects to one's question. When one asks 'who made this statue?', one may be satisfied to know that a sculptor did, and thus a sculptor would be a simple cause. The answer 'the sculptor Polycletus made it' would add some accidental cause as a further specification, and thus it would be a composite cause. (The circumstances in which the answer 'a sculptor made it' could be acceptable do not need to be particularly queer. One may wander, at an exhibition, whether some piece of art is the result of the work of an intentional agent, or whether it is stone carved by the wind and placed on a platform). Alternatively, if the question is asked by the headmaster of a fine arts school, who wants to know from the sculpting teacher the name and area of specialisation of a student, 'the sculptor Polycletus made it' could offer a simple cause as an answer, whereas 'the sculptor Polycletus from Athens' would add some accidental specification and would thus mention a composite cause.

Also what counts as a complete cause, as opposed to incomplete, depends on the explanatory context. "Why is that boat proceeding at that speed?" may be asked by the manager of a rowing team, the boat of which is placing second at a race, while looking at the winner. A *complete* answer, i.e. an answer which may help his team to win next time, should probably involve considerations of hydrodynamics, naval architecture, strength of the crew, and so on. The strength of the crew would then be an incomplete cause, which would make an unsatisfying answer to him. On the other hand, if the question is raised by the coach of a rowing team, while comparing different crews available to him, the crew can be a complete cause, since the shape of the boat and the features of the stream of water are constant and become background conditions.

Finally, also what is potentially or actually a cause is context-dependent. A statue which is about to be sculpted can actually come into existence only if several potentialities are available. For example, there needs to be a person who knows how to sculpt, and a person who knows how to quarry marble, and another who can drive the piece of marble to the studio. However, what will be properly a cause, as opposed to mere background conditions, depends on the context. In the next chapter we will see how Aquinas's metaphysics allows him to constrain what may count as a genuine cause, as opposed to a background condition. Before getting into that, however, we need to consider whether his views on causal relations are plausible.

3.4 Causal Relations

As we have seen, Aquinas suggests that causal relations should be analysed conditionally when he claimed that they have the form

$$(1) \quad \neg c \rightarrow \neg e$$

On the other hand, we have seen that a satisfying conditional analysis of causation should take the form of (2):

$$(2) \quad (c1 \ \& \ c2 \ \& \ \dots \neg c3 \ \& \ c4 \ \& \ \dots \neg c1^* \dots) \vee (c1^* \ \& \ c2^* \ \& \ \dots \neg c3 \ \& \ c4 \ \& \ \dots \neg c1) \vee \dots \leftrightarrow e$$

and should subsequently be developed along the lines suggested by Mackie. We should now consider whether Aquinas says anything that suggests, or is at least consistent, with a conditional analysis satisfying modern standards.

As we have seen, (2) takes causes to be at least necessary members of conjunctions of conditions which are minimally sufficient for the occurrence of an effect. For each effect, such members may be infinite in number, since there may be infinite possible events, which, if actual, would be *INUS* conditions of the resulting effect, and a sufficient condition is needed in order to account for the possibility of the existence (or non-existence) of each of them. There is a crucial passage in Aristotle's *Physics*, which Aquinas endorses (adding some examples, and a further distinction not important for our purposes). Aristotle starts his discussion of luck (or fortune) and chance (i.e., "the automatic", in Charlton's translation) as follows:

since we see some things always, and other for the most part, coming to be in the same way, it is plain that luck or its outcome is not called the cause of either of these—of that which is of necessity and always, or that which is for the most part. But since there are other things which come to be besides these, and all men say that they are the outcome of luck, plainly there is such thing as luck or the automatic, [i.e. by chance].⁵⁵

Here, Aristotle distinguishes between three kinds of causal connection: i) the initial conditions necessitate the effect: that "things come always to be in the same way" means that whenever certain conditions obtain some particular consequence will necessarily follow, i.e. the initial conditions are sufficient for the effect; ii) that things come to in the same way *for the most part* means that the obtaining of some initial condition makes the occurrence of a certain result probable, but not certain; iii) some things come to be in ways which are made neither necessary nor probable by the initial conditions, i.e. they happen by chance.

This distinction is problematic for the following reason. From i), we can conclude that Aristotle must have been aware that there are complete conditions, i.e. conjunctions of all causes, that are fully sufficient for an effect, i.e. that at least a simplified version of (2), for example one having an only disjunct as first member, must be true. This is a comforting result, since it suggests that an analysis of causation like (2) is on the lines of what Aristotle and Aquinas tried to do. But, then, what should we think of ii) and iii)? If Aristotle takes the initial conditions to be completely specified also in those cases, then his claim is that, on a metaphysical level, there are three forms of causal relations, and that in the case of two of them, i.e. ii) and iii), there is underdetermination of causation. The possibility that causation is undetermined, when all the concurrent causes are taken into account, leaves no room for the possibility of a conditional analysis of causation.

⁵⁵ *Physics*, II, 5, 196b 10-5.

There is a way out, though. We can take Aristotle's claims as introducing an epistemic difference: in case i) all the causes would be considered, and so the resulting conjunct is a sufficient condition of the effect; cases ii) and iii), at the contrary, would originate from the fact that only some of the causes are taken into account. ii) could be the claim that an effect is necessitated by *some* causes, *other things being equal*; but in the few cases in which other things are not equal, i.e. some causally interfering unknown and unusual events occur, the effect could be deviant from normal cases, although fully determined; iii) could just be a radical version of ii): *other things being equal*, a certain effect would not be made probable, nor improbable by some initial conditions, but it could happen nonetheless. In either case, though, full knowledge of all causes would show the necessity of the effect. In all cases, then, Aristotle's theory would be consistent with a conditional analysis of causation.

That this is the right interpretation of the passage may become clear if we consider it in the context of Aristotle's explanation of fortune and chance. For our purposes, it will be interesting to see how Aquinas developed a similar interpretation of this point.

In this part of the second book of *Physics*, Aristotle is trying to square common sense talk about fortune and chance, with the intuitions of many philosophers according to whom all happenings are necessarily determined by their causes:

necessarily, then, the causes from which an outcome of luck might come to be are indeterminate. That is why luck is thought to be an indeterminate sort of thing and inscrutable to man, and at the same time there is a way in which it might be thought that nothing comes to be as the outcome of luck. For all these things are rightly said, as might be expected. There is a way in which things come to be as the outcome of luck: they come to be by virtue of accident, and

luck is a accidental cause. But simply, it is the cause of nothing. And in the case of a house the cause is a builder, but by accident a flute-player [...].⁵⁶

Aristotle agrees with both sides of the dispute ("for all these things are rightly said"), but, of course, he needs to show that the inconsistency is only apparent. He grants that in a sense nothing happens by chance ("nothing comes to be as the outcome of luck"), and that chance is not really a cause ("is cause of nothing"). We say that it is by chance that the cause of the house is a flute-player, because the builder, who is the proper cause, happened to be a flute-player as well, and so the flute-player is an accidental cause of the house. Now, since the accidental causes of an event are "indeterminate",⁵⁷ and thus may be "inscrutable to man", there may be cases in which, *when the other things are not equal*, we do not know some accidental cause which made *other things unequal*, and is essential in determining the effect. Thus, even though the effect is fully determined by the conjunction of all the initial conditions, our knowledge may be inadequate in determining the proper causes of the thing to be explained. On a metaphysical level, the causation is determined. On an epistemological level, it may not be.

These claims are highly problematic. Every effect has infinite causes, some proper and some accidental, and so we can *never* have a full knowledge of all of them. How can we speak of fortune, i.e. note our epistemic limits, only in some cases? The answer suggested in the previous paragraph is that this happens only if the "*other things being equal*" condition does not hold true. This, however, needs to be explained. Aristotle's solution is grounded on teleology: some things, although not

⁵⁶ *Idem*, 197a 8-15. I have revised Charlton's translation of *sumbebēkos* with "concurrent" by the more traditional "accidental." My reason for doing this has to do with the importance of the traditional term "accident" in all medieval commentaries of Aristotle and particularly in Aquinas.

⁵⁷ "Infinite", according to the Latin translation of Aristotle's *Metaphysics* by William of Moerbeke, which was commented by Aquinas. That version suggests an interesting point, which was developed by Aquinas: since there are infinite accidental causes, nobody can know all the accidental causes of an event.

all, are for some end, i.e. have final causes. There are two classes of things of this kind: things made by humans with some intention, and natural beings, whose end is the full realisation of their form through growth. When things of this sort are in question (the intention of the agent in one case, and the principle of growth and organisation in another), a process of change is directed toward the fulfilment of some end. When things are normal, i.e. *other things being equal*, the end can be reached: the proper causes (material, efficient, formal, and final) give a satisfying account of the reasons due to which that thing exists and changes. In some cases, though, the reaching of an end may be made impossible by something else. It is important to note that its final cause has already been determined, when the thing was created with an intention, or informed by a principle of organisation having a built-in teleology. In these cases the "other things being equal" condition does not hold anymore, and the four usual causes are not enough to explain what happened. Sometimes, in these cases, we do not know what the interfering cause was, and then we say that the effect was the result of chance.⁵⁸

An example may be useful, and Aquinas offers an interesting one, which is open to a modern interpretation.⁵⁹ Let us imagine that a normal baby was born. In this case, we could say that the parents were the *efficient cause*, the biological materials received from the mother were the *material cause*, the genetical structure received by both parents the *formal cause*. Because of this genetical structure, the baby has a particular form, and is disposed to grow in certain ways: the fully realised form, i.e. the grown individual, is the *final cause*. Let us now imagine another baby, who was born with six fingers in one of his hands. He was caused exactly like the previous baby, under all the relevant respects; for example he had a normal genetical

⁵⁸ Aristotle explains the relation between chance and final causes in *Physics*, II, 5 and 6.

⁵⁹ Cf. *PE*, II, 8, 208.

structure. Consequently, he also had the same end. He was bound by his genes to grow in certain ways, in particular with five fingers in both his hands. Yet, in his case, something went wrong, i.e. some things were not equal: for example, some hormonal dysfunction caused an exaggerated cellular reproduction at a crucial point of his foetal development. This is a non-proper, accidental cause and it has to be adverted to, if we wish to explain why things were different in this case. When we do not manage to do this, we appeal to "chance."

In conclusion, Aristotle and Aquinas believed that any effect results from a conjunction of conditions which is as a whole sufficient for it. They believed that, on a metaphysical level, causes are always determined, and so their view was consistent with a conditional analysis of causation.

Even if Aquinas believed that each effect is determined by a set of conditions which is sufficient for it, his views would not be consistent with 2) unless he also believed that it is possible that none of those sets is necessary for the obtaining of the effect. A mark of the fact that he could have held this view can be found in his discussion of the infinity of accidental causes: he claimed that there are infinite accidental causes of any effect, since "an infinity of things may happen to one and the same."⁶⁰ This may be interpreted at least in two ways: a) as claiming that any one thing may undergo an infinite number of changes; b) as claiming that any one thing may have the accidents it has (i.e. be part of the events in which it is involved), through an infinite number of causes.

The latter interpretation would be consistent with 2): it claims that each of the sets of conditions sufficient for an effect may be unnecessary. A confirmation of the correctness of this interpretation can come from an example given by Aquinas:

⁶⁰ *PE*, II, 8, 214; (translation modified by me): "infinita uni possunt accidere."

per accidens causes are infinite, because it is possible for a man to go to a place because of an infinity of reasons; e.g., if he goes to visit someone, or to pursue an enemy, or to escape from a pursuer, or to see a show of some sort.⁶¹

Here Aquinas is still discussing fortune and chance. What really matters, though, is that he seems to be admitting that for each effect there is a set of conditions which is sufficient for it, but it does not need to be necessary. There may be other (possibly an infinite number of) sets of conditions each of which could have been sufficient, but was not actual. In his example, the man could have gone to that place for any of a (possibly infinite) series of reasons, under the assumption that all the other necessary requirements were satisfied.

We can now recapitulate Aquinas's views on causal relations. He believed that a cause is in some relation of necessary and sufficient conditional dependence with an effect, and so he accepted a conditional analysis of causation. However, he was also aware of other truths about causation which *could* have led him towards a more sophisticated analysis, such as 2). These truths are the following. First, he was aware that an effect is sufficiently conditioned by a conjunction of many, possibly infinite, causes. This is indicated by his discussion of the overdetermination of causation, by his distinction between complete and incomplete causes, and also by his admission of an infinite number of accidental and posterior causes. Second, his discussion of chance shows that he believed that each effect, on the metaphysical level, is sufficiently determined by a (infinite) set of causes, which is, then, a sufficient condition of the effect. Third and last, he was aware of the possibility that an effect may be produced by one of many alternative sets of complete causes, each one of which, then, is sufficient but not necessary for the occurrence of the effect. We can

⁶¹ *PE*, II, lectio ix, 218; (translation changed by me): "Sed haec causa per accidens infinita est: quia infinitis aliis de causis potest homo ire ad locum illum; puta si vadat causa visitandi aliquem, vel causa persequendi hostem, vel causa fugiendi persequentem, vel causa videndi aliqua spectabilia."

now draw some conclusions. Of course, he never proposed a sophisticated analysis like (2), but this is unsurprising, given the philosophical style of his period. At the same time, however, Aquinas was aware of all the reasons which may lead one to refine an analysis of causation like (1) (which he did mention) along the lines of (2). Thus, we can conclude that what he thought about causes cannot be inconsistent with them being also at least *INUS* conditions of their effects, even if he never used this term, nor any equivalent one.

Let us now consider whether Aristotelian-Thomistic causes can really be *INUS* conditions of their effects. We can consider the traditional example of a statue, which is convenient since it allows us to easily identify the four proper causes belonging to each of the four groups: the *material cause* of a statue is, for example the marble it is made of, the *efficient cause* is the sculptor, the *formal cause* is the mental image which was in the sculptor's mind, and the *final cause* is his desire to increase the artistic beauty of his town.

If a certain sculptor, for example Michelangelo, had not sculpted a certain statue, someone else could have sculpted exactly that statue, even though Michelangelo's presence was necessary under the conditions which actually obtained and which were sufficient to cause the existence of that statue. Michelangelo is an *INUS* condition of that statue.⁶²

⁶² This claim is contrary to Kripke's thesis on origin and *de re* necessity. According to Kripke (1980), the origin of an object is necessary to its identity across the possible worlds in which that very object exists. He appeals to the intuition according to which a man would not be the individual he is, had he sprung from a different sperm and/or egg. This could seem to clash with the views supported by me, since the efficient, material, formal and final causes seem to be part of the origin of an object. Kripke's point, however, rests on intuitions about a few somewhat dramatic examples and he does not consider, for examples, cases of slow and systematic replacement of matter, which impinge on us intuitions in the opposite direction. Wiggins (2001, 133 ff.) criticises Kripke on these grounds, and suggests the possibility that material causes need not to be essential for the objects they cause. Wiggins rejects Kripke's view on the grounds of his spatio-temporal criterion of identity: an object (he discusses artefacts) may be the same object it is in all possible worlds in which it maintains its essential properties throughout its spatio-temporal history, no matter what material it is made of. Naturally, in all the possible worlds in which it is that same objects it is, it needs to be made of a right kind of

If the block of marble with which the statue was made had not been available, that statue could still have been made with other marble, but the fact that that block of marble was there was a necessary (given all the other obtaining conditions) and sufficient (jointly with all the other obtaining conditions) condition for the existence of the statue. That block of marble, then, is an *INUS* condition of the statue.

If Michelangelo had not had exactly that mental image in his mind when he sculpted the statue, but a sufficiently similar one, he would have still sculpted that very statue; but the fact that he had exactly that form in his mind is a necessary (given the other circumstances) and sufficient (jointly with the other circumstances) condition for the existence of the statue, i.e. it is one of its *INUS* conditions.

If Michelangelo had not desired to increase the beauty of his town, he could still have sculpted that statue, for example because he wanted some money from a patron; but his desire to increase his town's beauty, given all the other circumstances, was a necessary part of a jointure of conditions which was sufficient for the production of the statue. Michelangelo's intentions, thus, were an *INUS* condition for the existence of the statue.

In conclusion, it can be suggested that a conditional analysis like 2) can coherently fit in the Aristotelian-Thomistic theory of causation. Furthermore, with a conditional analysis of causation in place, as we have seen above, an argument to the best explanation may grant the second (and ontologically less committing) kind of realism about causation which was mentioned at the beginning of this chapter, and which is required by Aquinas's views.

Two further problems shed some doubts about this conclusion. Both have something in common: their solution may come from considerations concerning the

material, suitable to sustain all the properties which it needs to have throughout its spatio-temporal history. The same defence can be extended to the other three kinds of causes.

fact that the *relata* of causal connections, according to Aquinas, are the hylomorphic components of substances. First, as we saw above, Mackie's conditional analysis tells us what a necessary condition for something being a cause is: a cause is *also at least an INUS condition*. There are things which are not causes, though, and still satisfy (2); for example, they are properties supervening on actual causes, or are conditions which one would not consider as causes in a given causal field. No matter how interesting Mackie's analysis may be, then, it seems that it cannot be used as a mark of the ontological class of causes. One needs a narrative to explain what causes are, besides being at least *INUS* conditions. Second, if it is true that what Aquinas says about causal connections suggests an analysis (at least) similar to (2), and if it is true that this can be best explained by proposing the real existence of causation, should he not conclude that there is one and *only one* class of things which may be called causes, rather than four? In other words, granted that we can know that causation exists for the proposed reason, why should we believe that there are *four* groups of causes? Metaphysical economy should lead him to claim that, since there is an only conditional analysis of causation, there must be an only group of causes.

An answer to the first problem could be that according to Aquinas *anything* which is an *INUS* condition may be considered a cause, i.e. that he does not share the common (at least nowadays) intuition according to which there are things which are *INUS* conditions but fail to have any causal relevance. Let us recall, in fact, that even the whiteness of a builder, according to him, can be considered a cause of a house, i.e. an accidental cause. This example is interesting because it concerns a typical counterexample of (2), in contemporary discussions: the property *being coloured* is supervenient in things which may be causes, a lot of people would say, and so it is an *INUS* condition when it supervenes on something which is such. If a golf club is

involved in an event which is an *INUS* condition of the hitting of a ball, so is the property *being coloured*, since the club needs to be some colour. Even the property of being white may be involved in an event which is an *INUS* condition, assuming that that club is white: the club could have been coloured otherwise, but given the actual conditions (among which there are the following: the club is not brown, the club is not black, etc. etc.), its being white is necessary. In other words, differences in the colour of the club may generate different minimal sufficient conditions, but given a certain minimal sufficient condition, the colour of the club is an *INUS* condition. The property of being white, though, has no relevant causal role in the hitting of the ball, we would say, and then we would have the problem to explain what a relevant causal role is. Aquinas, instead, would grant that whiteness is a cause, but an accidental one, as opposed to a proper one. This seems a simple syntactic difference: he calls 'cause' any *INUS* condition, and 'proper cause' what we would call simply 'cause'; his accidental causes would be *INUS* conditions which have no causal role. Then we could reformulate our contemporary problem: what is special about proper causes and differentiates them from accidental ones? In introducing the accidental-proper distinction in 3.2, a hint was suggested, but a full explanation postponed: proper causes are those which are directly responsible for the hylomorphic composition of the resulting effect. A complete explanation of this response, though, requires considerations concerning what the *relata* of causal connections may be, which will be developed in next chapter.

A solution to the second problem may come from the fact that Aquinas uses the term "*species*" to refer to the four Aristotelian groups of causes. This suggests that he takes the concept *cause* to refer to a common genus, shared by the four groups. As it is well known, different species belonging to the same genus, share the same

definition of the genus, but in the case of each of them a specific characterising difference has to be added. So *being also an at least INUS condition* may be the common definition, and each species of cause will then be specified by further characteristics. These may depend on what objects are in an at least *INUS*-relation with each other: for example, if some matter can be said to be at least the *INUS*-condition of the matter of some substance, we can say that it is its material cause. The availability of this solution, though, depends, on an hermeneutic level, on what sort of things Aquinas took to be in causal relation with each other (e.g., objects, properties, events, states, etc.), and, on a philosophical level, on the plausibility of his views. What sort of things are related in causal connections will be discussed in next chapter.

Chapter Four

Causes, Effects, and Formal Causation

4.1 Causal *Relata*, Events and Substances

In chapter three, we considered Aquinas's views on *causal relations*, and saw that they are compatible with a conditional analysis of causation along the lines suggested by Mackie. In this chapter, our attention will be focused on Aquinas's conception of *causal relata*, i.e. of things which may count as causes and effects when properly embedded in a causal relation. We will keep enquiring whether Aquinas's theory can cope with the demands, prompted by contemporary analyses, which any philosophically respectable theory of causation needs to satisfy. This will require a refinement of the metaphysical presuppositions of Mackie's proposal, which will be carried out in this section. Subsequently, in the next section, we will consider how a Thomistic view can meet the requirements on causal *relata* prompted within contemporary debates. The proposal which will be expounded, strictly speaking, does not belong to Aquinas, but it is Thomistic, in the sense that it is one of the possible theories which follow from the assumption of his metaphysics. The resulting proposal will allow us to explain two points which were left open in chapter three: 1) why Aquinas's theory requires only one kind of causal relation and yet embraces four species of causes; 2) why real (proper) causes must be distinguished from other at least *INUS* conditions (accidental causes). In the final section, formal causation will be paid a special attention.

Someone could object that Aquinas's analysis of causal relations presented in the previous chapter is dubious since it involves substances and their hylomorphic components as causal *relata*, but only events seem to be suitable candidates as causes and effects. Hilary Putnam, for example, has famously contended that an Aristotelian theory of formal causation could be accepted, were it not for the fact that nowadays we all know that causal *relata* must be events, and cannot be objects.¹ Indeed, Mackie himself seems to think about events when he carries out his conditional analysis of causation. These are some of the causes and effects he refers to while discussing the example of the burning which we looked at in the previous chapter:

'a fire broke out in a certain house'

'the house's catching fire at this time'

'the overturning of a lighted oil stove'

'the presence of inflammable material'

'the absence of a suitably placed sprinkler'

All these are either sentences or nominalised sentences which refer to individual events.

While offering examples of this sort, however, Mackie does not discuss the nature of causal *relata*, nor does he seem to be aware of some serious problems that his proposal has to face when one tries to develop this aspect of it. Donald Davidson (1967) famously pointed out some of those problems and ended up rejecting the possibility of explaining causation conditionally. Unless some other way out can be found, Mackie's proposal is in no better position than Lewis's and this would be fatal for Aquinas's conception of causation described in the previous chapter. However,

¹ Putnam 1993, 65: "*we now think of events rather than objects as causes*. At one time it would have sounded perfectly all right to say that the parents are the cause of the child, but today we would say that the event of procreation (or something of that kind) is the cause of the event of the child's being born."

Kim (1971) proposed a theory of events which lets Mackie's theory meet Davidson's objections, and which can be developed so that Thomistic hylomorphic components of substances can turn out to be causally related. Before getting into that, though, we shall consider Davidson's objections.

Davidson notes that the thought that causation is a conditional relation among events is incoherent, since the specification of the conditions which should obtain in order for the relation to provide a true analysis of the causation of a certain effect *e* (i.e., in Mackie's terminology, the identification of the disjunction (AX or Y), which is necessary and sufficient for the effect *e*) cannot be a description of events. Let us take an example due to Mill and discussed by Davidson: Smith dies as a consequence of a slip of his foot while climbing a ladder. The conditional analysis approach requires that we specify all the conditions that made the death of Smith necessary, besides the fact that his foot slipped: this in fact, is not a sufficient condition, since slipping while climbing a ladder is not always followed by death. Another condition, for example, would be the weight of Smith: had he been as light as a feather, he would be still alive. All these conditions need to be specified in (AX or Y), although we do not normally bother to mention those which are too obvious. Davidson notes that

If it was Smith's fall that killed him, and Smith weighed 12 stone, then Smith's fall was the fall of a man who weighed 12 stone, whether or not we know it or mention it. How could Smith's actual fall, with Smith's weighing, as he did, 12 stone, be any more efficacious in killing him than Smith's actual fall?²

The point is that the slipping of Smith and his weighing 12 stone at the time of the slip are one and the same event, i.e. the slipping of Smith who weighed 12 stone. When, while trying to fully specify (AX or Y), we add the condition that Smith weighed 12 stone, we are not introducing a further event into the picture, but we are

just adding a further description of the event we had already referred to in introducing the condition that Smith slipped. Thus a supporter of the conditional analysis of causation cannot take the conditions specified in it to be events, and a conditional analysis clashes with the view that causes and effects are events.

A possible way out would be to suggest that causes and effects correspond to sentences rather than events. Possibly, they could be sentences the semantic values of which are events. In that way, a conditional analysis could still be supported, since sentences "can express conditions of truth for others."³ In this case, in a causal statement such as

- (1) The short circuit caused the fire

the two expressions 'the short circuit' and 'the fire' would not be singular terms referring to events, but nominalised sentences, and the logical form of the whole would be made perspicuous by the following:

- (2) *The fact that* there was a short circuit *caused it to be the case that* there was a fire

in which the italicised words constitute a new logical connective, like 'and' and 'if...then....'

Davidson rejected this possibility, for two reasons: first, contrary to what is normally assumed, the connective in (2) would not be a conditional, neither truth-

² Davidson 1967, 76.

³ *Ibid.*, 77.

functional nor non-truth-functional; second, (2) would not give the logical form of singular causal statements. Let us consider his arguments for these conclusions.

Davidson's reasons for claiming that the connective in (2) cannot be a truth-functional conditional depend on the fact that (2) cannot be an instantiation of an universal law (in the Humean sense of an universally quantified material conditional). According to Davidson, on the other hand, this seems to be the only way in which, by maintaining the meaning of the material conditional included in the universal law which (2) is supposed to instantiate, the connective in (2) could be truth-functional. He does not explain why that should be so, but one may presume it is because there is no way to capture the meaning of the connective in (2) through the relation between the truth values of the two sentences embedded in it and the truth value of the whole; in fact, the truth-value of a sentence like (2) may change, even if the truth values of the two sentences which compose it remain constant. Consequently, the only way to determine the meaning of the causal connective in a way such that it turns out to be truth conditional, is to say that its meaning is parasitic on that of another connective which is truth-functional. The relation between the conditional contained in an universal law and the causal connective in an instantiation of that law may offer precisely a case of that sort.

A sentence like (2), however, in Davidson's view cannot be an instantiation of an universal law, since - although it does entail also an instantiation of an universal law (e.g., 'if there was a short circuit, then there was a fire')- it entails the truth of the conjunction of the two sentences embedded in it. We can say that (2) follows from an universal law and an appropriate conjunction, but then it does not simply instantiate the universal law, and thus the meaning of the truth-functional conditional in the universal law is not warranted to explain the meaning of the connective in (2).

Davidson considers and rejects also an attempt to interpret the connective in (2) as a non-truth-functional conditional. According to Pap (1958), in fact, the causal operator is similar to the material conditional, but "the falsity of the antecedent is no ground for inferring the truth of the causal implication."⁴ In this way, the truth value of the whole would be indeterminate when the antecedent is false, with the consequence that the meaning of the operator is non-truth-functionally determined. Davidson contends that this is wrong: when the antecedent of a causal relation is false, the whole is false, not indeterminate. Thus the truth conditions of the causal operator would be just those of a conjunction, and it would not be clear how the two would be different.

Finally, Davidson offers an argument to the effect that (2) does not give the logical form of singular causal statements. First of all, we can note that (2) is not truth-functional: if we substitute one of the two sentences embedded in it with another sentence having the same truth-value, the truth-value of (2) may change. However, singular terms contained in (2) may be substituted with co-extensive singular terms, without jeopardising the truth value of the whole causal statement. If Smith's fall caused his death, and Smith was the best friend of Clark, then the fall of the best friend of Clark caused his own death. Now, if the connective in (2) gave the logical form of singular causal statements, then the sentences embedded in that causal statement would be substitutable by logically equivalent ones. Thus, we could substitute one of the sentences embedded in (2) with a logical equivalent sentence containing the nominalised form of the substituted sentence. At that point, the nominalised form of the substituted sentence can be substituted with a co-extensive term, since the causal operator allows substitutions of this sort, but this leads to a substitution of sentences, once we have de-nominalised the newly introduced

⁴ Pap 1958, 212, quoted in Davidson 1967, 78.

singular term.⁵ Consequently, the causal operator should be truth-functional, but this is inconsistent with one of the premises. Davidson's way out seems to be the proposal to dismiss the idea

that (2) gives the logical form of (1), and with it the ideas that the "caused" of (1) is a more or less concealed sentential connective, and that causes are fully expressed only by sentences.⁶

The alternative he suggests is that there would be a variety of kinds of causal statements, some, like (1), expressing connections among events, others, like (2), referring to relations among sentences describing events. This distinction would be possible since, according to Davidson, it would be true, as Hume suggested, that any time a singular causal statement is true there must be a true covering law; however, this does not mean that the knowledge of a singular causal statement presupposes the knowledge of the respective covering law, nor that the singular causal statement entails a covering law, as C.J. Ducasse (1966) rightly contended. Thus, sentences like (1) are not correctly analysed by highlighting their alleged logical form, like (2) tries to do, although when the attention is focused on the covering laws which must be true when they are true, their relations with the connectives which are included in the relevant covering laws become relevant.⁷

Davidson's objection and the consequent proposal could be fatal for Mackie's analysis of causation. The latter, however, offers resources for a reply. Let us begin by noting that Davidson's criticism of the possibility that causal singular statements

⁵ This is a version of the famous and contentious slingshot argument. For a discussion of this, cf. Neale 2001, 49-57.

⁶ Davidson 1967, 79.

⁷ Against Davidson, Anscombe (1971) suggested that if we do not need to know a covering law to make a causal statement and if a causal statement does not necessarily entail a covering law, there is no need to suppose that all causal statements are covered by some law. This point, however, does not jeopardise the argument which Davidson wants to ground on the idea that we do not need to know covering laws in order to make causal statements, although it entails a modally weaker conclusion: it remains true that (1) is not correctly analysed by (2), but the difference is that the relation between the

are about events is problematic. His reasons had to do with the fact that a full specification of the causes of a certain effect requires several descriptions of the same event, rather than a conjunction of several singular terms referring to different events. Thus, in the example we have considered, Smith's slip, Smith's fall, and Smith's weighing 12 stone are different aspects of the one event which caused his death.

Davidson's criticism to Mackie, however, is open to a serious objection. The examples used by Davidson, like that concerning Smith's fall, certainly make a good point: at least in some cases, when we specify the at least *INUS* conditions of a certain effect, we do not list events, but we offer different manners of describing the same events. This, nonetheless, is not to say that *all the specifications* of the at least *INUS* conditions are like that. Some of the at least *INUS* conditions, in fact, could describe different events. Let us take the example of Smith's fall again. It is one of the *INUS* conditions of his death that the event of someone's laying a mattress at the feet of the ladder did not occur. Had it occurred, Smith would not have died. A similar case could be made also for positive events: had not someone brought the ladder into the Garden, Smith would not have even tried to climb it; had it not rained, the ladder would not have been slippery, and Smith would be still alive. In conclusion, the conjunction AX , one of the disjuncts of $(AX \text{ or } Y)$, may contain members which are extensionally equivalent, although they have different senses, but it may also contain conjuncts which refer to different events. If this is so, Davidson's criticism to Mackie is dubious.

Davidson could reply that, necessarily, all conjuncts of AX are different ways of referring to the same event, since, no matter how many conjuncts we add to AX ,

connective of a sentence like (1) and the connective of a relevant covering law can only be relevant in cases where a covering law actually exists; such a law, however, does not need to exist in all cases.

the situation they refer to is one and the same, a certain event which occurred in the world. In the example, 'Smith slipped on the ladder' refers to the event which is also referred to by 'someone brought the ladder into the garden.' A situation in which nobody had brought a ladder into the garden, would not be the one in which Smith slipped, since the event of Smith's slip is his slipping on a ladder that someone had brought into the garden. The fact that someone might have brought the ladder into the garden at a time quite anterior to Smith's slip is not relevant: in fact, they are just event-slices of a whole event which endured throughout the entire time separating the two actions. In other words, someone bringing the ladder is a necessary part of an event which Smith's slip is also a necessary part of. They are necessary parts since the event would not be the event it is unless it had (also) both those parts.

Although Davidson did not mention this reply, I think it is a view that he would have endorsed in his essay under discussion (1967).⁸ In fact, there he objects to Mackie's intuition according to which a certain fire in a house could have occurred even though the short circuit which caused it had not occurred, but an oil stove had been overturned instead. In Davidson's opinion, "a short circuit elsewhere could not have caused *this* fire, nor could the overturning of a lighted oil stove."⁹ His intuition, thus, seems close to those which led Kripke towards the notion of a *posteriori* necessity. In the previous chapter we have already seen that Kripke's view is incompatible with Mackie's conditional analysis of causation, but what matters here is that Davidson could appeal to this intuition to claim that whatever the conditions specified in *AX* are, they are just different descriptions of one and the same event. In fact, since he believes that a fire is the fire it is because it necessarily had the origin it

⁸ Elsewhere, Davidson (1993) made a similar point as a defence of anomalous monism: according to a critique, anomalous monism purports that an event with the same physical description, but a different mental one, would have caused the action all the same. Against this objection, Davidson contends that it would not have been the same event.

had, he should admit that the origin of an object is part of all events in which that object is involved.

It seems to me that this line of defence would be problematic, since it seems to entail that all that happens is part of one single event. Any action or happening, in fact, would be necessarily related *a posteriori* to all the events which happened and will happen. But if having an *a posteriori* necessary relation is sufficient for being part of a single event, then possibly all happenings and actions are part of one single event. In this way, however, any causal statement should be true, i.e. trivial and uninformative, for any thing would be a cause of anything else. This, however, is inconsistent with our basic intuitions on the meaning of causal statements. A way out would be to renounce the idea that causal relations are among events, and Davidson does precisely that. The point, here, though, is that one could avoid following Davidson, and develop Mackie's theory, by denying that *a posteriori* necessary relations among happenings and actions entail event-identity. Such a project, however, requires that one can offer a plausible account of the individuation of events, and an explanation of how the proposed account fits in a conditional analysis of causation. It seems to me that this is precisely what Kim (1971) tried to do. He did not openly admit to challenge Davidson's account, but that was probably his intention, since, after granting Davidson the merit of having shown some serious faults in Mackie's theory,¹⁰ he goes on to offer an account of event identification which may vindicate a conditional analysis of causation.

In Kim's opinion,

the logical and ontological foundations of Mackie's discussion of causal relations are in urgent need of repair; in fact, 'repair' is too mild a word, since

⁹ *Ibid.*, 77.

¹⁰ Kim 1971, 71.

underlying

Mackie does not seem aware of the problem of the underlining logic of event talk for his analysis of causation.¹¹

Kim recognises several different problems concerning Mackie's talk of events. Before getting into his criticisms, however, it is worth pausing to consider why we need to be concerned with them. The point of our interest for Mackie's proposal is that it seems to represent the best implementation of a line of analysis of causation which Aquinas seems to favour: i.e., conditional analysis. All problems faced by Mackie's proposal, therefore, are problems which Aquinas – or at least the Aquinas reconstructed in the interpretation propose here – needs to overcome, especially if his views on causation have to be presented in contemporary debates as plausible contenders. Thus, Kim's objections to Mackie are relevant for our concerns with Aquinas's theory of causation.

But there is a further point to be considered. Although Aquinas takes causal relations to be conditional relations, as we have seen in chapter three, and although his intuition is best implemented by Mackie's proposal, we can already note that his views on causal *relata* do not seem to square with Mackie's: in chapter three we have anticipated that Aquinas's takes the hylomorphic constituents of substances to be causal *relata*, whereas, in the present chapter, we have noted that according to Mackie it is events which are causes and effects. Since Kim's objections to Mackie focus on the thesis that events are causal *relata*, they touch on a point which is particularly interesting for our purposes. As we shall see, Kim's objections lead him to offer a revision of Mackie's proposal which makes Aquinas's views on causal *relata* intelligible and appealing. Considering Kim's points, therefore, will help us to implement a Thomistic proposal.

¹¹ *Ibid.*, 71.

After these general remarks, let us turn to Kim's objections to Mackie's talk of events. First of all, Kim tries to make Mackie's logical apparatus more precise. He emphasises that Mackie's notation assumes that traditional sentential operators can be used in events talk to construct "complex events" (for example, AX , $(AX \text{ or } Y)$, etc.) out of "simple events" (for example, A , X), although events-talk does not involve sentences and propositions, but singular terms and events. (Of course, the idea that causal statements are conditionally analysable for the fact that they have the logical form of sentences connected by some operator is hopeless, as Davidson showed. And Kim wants to vindicate a conditional analysis). Kim defines negation, conjunction and disjunction operators for events talk along the lines of the operators of propositional logic. Furthermore, he highlights the *equivalence condition*, implicitly assumed, but not discussed, by Mackie: "truth-functionally equivalent event names and descriptions designate the same event."¹² The upshot of the equivalence description, is that the complexity of complex events (for example, AB) turns out to be a characteristic of *events descriptions*, not of *events*. This generates a confusion between events and descriptions of events, which was already underlined by Davidson, and, Kim notes, leads to three main problems. Let us consider them.

First, Mackie's notion of a sufficient minimal condition, assumed the given logic of events, is doubtful. Let us imagine that AB is a minimal sufficient condition for P . In this case, almost any C can be shown to be an *INUS* condition (and thus a possible cause) of P . In fact, given the meaning of events disjunction, ' A ' and ' $(A \text{ or } \neg C)$ ' refer to the same event, and thus AB is equivalent to $(A \text{ or } \neg C)B$. $\neg C$ cannot obtain, however, otherwise AB would not be *minimal* sufficient, and $\neg\neg C$, that is C , must be the case. This entails that also $C(A \text{ or } \neg C)B$ is a minimal sufficient condition of P , i.e. C is an *INUS* condition of P . The only restrictions are that $(A \text{ or } \neg C)$ cannot

¹² *Ibid.*, 65.

amount to A , and that C alone or jointly with B is not sufficient for P . One could contend that $C(A \text{ or } \neg C)B$ is not in a disjunctive normal form, but sufficient conditions can be minimal only when they are in normal disjunctive form. The problem with this, though, is that sentences do not normally have unique disjunctive normal forms. $(A \text{ or } \neg AB)$, $(\neg BA \text{ or } B)$ and $(A \text{ or } B)$, for example, are all logically equivalent and in normal forms, and, thus, for the equivalence condition, refer to the same event; however, according to the first $\neg A$ is an *INUS* condition of P , according to the second $\neg B$ is an *INUS* condition of P , according to the third neither $\neg A$ nor $\neg B$ are *INUS* conditions of P . How can it be that the same minimal sufficient condition turns out to be made of different events?

Second, Kim underlines a confusion between events and descriptions of events, which is built in the definition of a minimal sufficient condition. That definition allows a condition to be minimally sufficient only in cases in which that condition has been represented in a certain logical form, namely in a way such that all the necessary conditions for the effect have been explicitly spelled out.

Whether or not an event is a minimal sufficient condition for another would depend on the logical form of the particular description chosen for it; but the equivalence condition shows that no reliable inference can be made from the logical form of an event name to the ontological structure of the event named by it.¹³

This is a reformulation of the problem already discussed by Davidson: Mackie supposes that events are causes and effects, but then he takes the names of events to be essential for the correctness of causal statements. The definition of a minimal sufficient condition, then has to be thus reformulated:

An event E is a minimal sufficient condition for P if and only if it is representable (i.e. is named) by an expression of the form " $A1 \dots An$ "

¹³ *Ibid.*, 68.

containing no redundancies such that $A1 \dots An$ is sufficient for P and the deletion of any of the As results in a condition not sufficient for P .¹⁴

In this way, the distinction between events and expressions referring to events is taken into account. What a theory needs, then, is a good way of explaining the relationship between the complexity of events descriptions and the actual structures of events to which they refer. This will be Kim's intent in his proposal, as we shall see in short.

Third, while explaining what a cause is, Mackie introduces the requirement that, besides being at least an *INUS* condition, A needs also to exist, and "must be present on the occasion in question"¹⁵ (see the second clause of the definition of ' A caused B ' in section 3.2 above). Kim stresses that the qualification "on the occasion in question" suggests that A is not an individual event, but a generic event, so that the expression would be saying that in the occasion in question the generic event A must be exemplified, i.e. there must be an individual event falling under the generic event A . The 'in the occasion in question' clause does not mean just that A exists, and thus it is not redundant, since the last condition put forward by Mackie in the explanation of ' A caused B ' is that any minimal sufficient condition other than AX must be "absent in the occasion in question."¹⁶ This, according to Kim, cannot mean that those events do not exist at all, otherwise it would be hard to see how they could be minimal sufficient conditions of any event; consequently, that expression must mean that those events exist, but are not exemplified on the occasion in question. Thus, ' A ', ' B ', ' X ', and so on, must be taken as referring to universals, and their "presence" and "absence" as their being exemplified and not being exemplified respectively.

¹⁴ *Ibid*, 68.

¹⁵ Mackie 1965, 37.

¹⁶ *Ibid*.

In conclusion, Kim claims that Mackie's theory can be vindicated only if one propose an ontology of events which makes a clear distinction between events and events descriptions, and which accommodates the relationship between individual events and universal (generic) events. Such a theory will probably be able to cope with Davidson's criticism.

Kim notes that Mackie's theory requires an analysis in the terms of necessary and sufficient conditions of singular causal statements. Necessity and sufficiency, though, are properties of generic events, rather than individual event. When we say "oxygen is necessary for combustion", we do not mean that some particular amount of oxygen is necessary, but that the presence of some amount of oxygen (whatever that is) was necessary. Necessity and sufficiency of individual events must somehow be derivative from those of generic events. Thus, Kim concludes

we need entities that possess both an element of generality and an element of particularity; the former is necessary for making sense of the relations of necessity and sufficiency, and the latter for making sense of singular causal statements.¹⁷

Such entities are available, according to Kim: they are substances, i.e. (individual) objects realising (universal) properties.¹⁸ Thus, Kim defines an event as *the exemplifying of an empirical property by an object at a time*, so that to comprehend both states and changes. Furthermore, he proposes to use the notation $[x, P, t]$ to refer to the event of the object x exemplifying the property P at time t . (He notes that this is generalisable in order to include polyadic events, but he decides to overlook that complication). Thus all nominalised sentences, such as 'the death of Socrates', 'the sinking of Titanic' and so on, can be represented with this notation, when an appropriate date is specified.

¹⁷ Kim 1971, 71.

Since Mackie's notation for events concerns generic events (A , B etc.), Kim proposes to give up his idea that minimal sufficient conditions are conjunctions of generic events (AX) and necessary conditions are disjunctions of compound generic events (AX or Y). Indeed, as we have seen, the logical machinery that Mackie needs to accept in order to conjunct and disjunct generic events such as A , B etc., can be abandoned, and its unacceptable consequences considered above can thus be avoided. Alternatively, Kim proposes to speak of *sets of properties*, instead of conjunctions or disjunctions of generic events. He stipulates that "a set of properties is *realised* or *exemplified* on a given occasion, provided each property in the set is exemplified on that occasion."¹⁹ Consequently, the claim that in Mackie's notation would have been expressed by the sentence ' $ABC \vee CDF$ is a necessary and sufficient condition of P ', can now be captured by the expression 'Whenever the set of properties [A , B , C] is realised or the set [C , D , F] is realised, P is realised, and also conversely.' Similarly, a set is minimally sufficient for P if and only if it is sufficient for P , but no subset of it is sufficient for P . At this point, Kim defines *INUS* conditionality for properties and sets of properties. A is an *INUS* property of P if and only if there is some unique family S_{AP} of sets s_i of properties such that:

- a) for some i , $A \in s_i$;
- b) for each i , $s_i \in S_{AP}$ if and only if s_i is minimal sufficient for P ;
- c) S_{AP} is a necessary condition for P (that is, if P is realised, some member s_i of S_{AP} must also be realised).

After defining the notions of necessity and sufficiency for sets of properties, and that of *INUS* conditionality for properties, Kim can go on to define the fundamental notion of *INUS* conditionality for events:

¹⁸ Kim notes that one could utilise a space-time region ontology, instead of a substance ontology: he

$[x, A, t_1]$ is an *INUS* condition of $[y, P, t]$ if and only if

- (i) $A(x, t_1), P(y, t)$
- (ii) A is an *INUS* property of P ;
- (iii) Some set s_i in S_{AP} containing A and at least one other property is realised on the occasion of $[x, A, t_1]$;
- (iv) S_{AP} contains at least one set other than s_i .
- (v) No set of properties in S_{AP} other than s_i is realised on the occasion of $[y, P, t]$.

Kim claims that the notion of *at least* an *INUS* condition is "similarly definable."²⁰ Although he does not do it, we can guess how that can be done. A is at least an *INUS* conditions of P if and only if one and only one of the following obtains:

- I) A is an *INUS* condition of P ;
- II) All the requirements for A being an *INUS* condition of P are met with the exception of (iv) - and thus A is a necessary condition of P ;
- III) All the requirements for A being an *INUS* condition of P are met with the exception of (iii) and (iv), which are satisfyingly substituted by the following: 'some set s_i in S_{AP} containing A and no other property is realised on the occasion of $[x, A, t_1]$ '; in this case, A is a necessary and sufficient condition of P .

At this point, Kim may conclude that ' $[x, A, t_1]$ caused $[y, P, t]$ ' means also - or at least -, that $[x, A, t_1]$ is at least an *INUS* condition of $[y, P, t]$.

Kim's proposal has another advantage, besides that of clarifying the relation between events and descriptions of events. In fact, it offers a criterion for the identity and the identification of events which allows one to explain what makes events

develops a proposal based on the latter, but the former could found a suitable alternative.

¹⁹ Kim 1971, 72.

numerically different from each other. In particular, the proposal reduces the identity of events to the identity of the substances which are involved in them. Thus, Davidson's path, which led towards the conclusion that any specification of a cause is a different description of the same single event, may be blocked: the different conditions which have to be specified as parts of the complete cause of an event belong to different events (or are descriptions of different events) as far as they concern different objects.

Let us look at the usual example. Kim's framework allows us to settle Davidson's intuition according to which the slipping of Smith and the slipping of someone who weighed 12 stone are a numerically identical event. Thus, if S is the property of slipping on a ladder, s is the object Smith and t is the time at which Smith had the fatal slip, then $[s, S, t]$ is the event of Smith slipping on ladder. Since Smith weighed 12 stone at t , however, we can claim that $[s, S, t]$ is identical to the event of the slipping of someone who weighed 12 stone. We cannot claim, though, that $[s, S, t]$ is identical to the event of someone bringing the ladder into the garden at $t-n$, since the latter event involves a different object (the person who brought the ladder) and a different time.²¹ Of course, as Kim recognises, this account leaves a question still unanswered: "how do we characterise generally the set of individual events which jointly cause some event?"²² The problem is that the presence of an event exemplifying a certain property may not be enough. The fact that someone brought a ladder into the garden, for example, could be insufficient, since Smith could have slipped on some other ladder. Evidently, we would need to add some constraints in

²⁰ *Ibid.*, 73.

²¹ Let us assume that it was not the case the Smith was the person who brought the ladder into the garden at t , and, thus, tried to climb the ladder while carrying it. In that case, the two events would in fact be numerically identical, and all problems of identifications could be avoided through a polyadic account of events. Such a complication, however, seems quite straightforward and can be ignored, since it does not seem to lead towards philosophically important considerations.

²² Kim 1971, 73.

order to secure cross references among the events in each s_i . However, quite correctly, Kim notes that this is a problem which all accounts of causation have to face, and thus it does not count against his proposal in particular.

Kim considers another worry which may arise from his proposal: how can we be certain that $[y, P, t]$ is the cause of $[x, A, t_1]$? Could not it be another event of the appropriate type (i.e., exemplifying P at t), which did not cause $[x, A, t_1]$, but some other event $[z, A, t_1]$? For example, how do we secure that my striking of a match causes the lighting that match, and not the lighting of Clark's match, which he lit at the same time? Again, in Kim's view this is a general problem of all accounts of causation which cannot be charged against his proposal.

If these defences of Kim's proposal are accepted, as it seems they should be, his substance-based account of events seems to meet the objections which arose from a close consideration of the ontology of events presupposed by Mackie's analysis. His account, in fact, a) clarifies the relation between events and descriptions of events, b) explains how events can be identified and why they differ from each other, and c) explains the relation of necessity and sufficiency among events. The question we should ask, now, is whether Kim's theory of causation grounded on his substance-based account of events can accommodate Aquinas's theory of substances. If it can, and we will suggest that it can, Aquinas's theory of causation can be taken seriously.

4.2 Causal *Relata* and Hylomorphism

As we have seen in chapter one, according to Aquinas, substances are hylomorphically constituted, i.e. they are the result of a substantial form structuring

some appropriate matter; in virtue of their structure, substances may have a built in teleology, i.e. some of the characteristics they have in virtue of their form are dispositions to develop according to processes reaching towards certain ends. What individuates a substance, thus, is its particular individual form, the matter of which it is constituted, and the end towards which its existence leads. We have also seen in section 1.4, that through the reception of its substantial form, the matter of a thing is actualised and that thing receives its own act of being, i.e. comes into existence. Form, thus, must be received through the action of something which has the capacity to actualise the potentialities contained in matter. In this sense, a form is an act, i.e. the energy to turn matter into a certain thing.

We have also seen that, in virtue of its form, each substance falls under a certain sortal concept, and under some concepts which express the exemplification of certain essential properties. Furthermore, substances may also receive forms which are not substantial, i.e. organising principles in virtue of which they may change some of their characteristics (accidents), without ceasing to fall under a certain sortal concept. The acquisition of such a form, however, will make a thing exemplify some accidental property. Finally, substantiality comes in degrees: we sometimes apply concepts which are classificatory in manners similar to those of sortal concepts, although the things under which they fall maintain their substantial form. The typical example is that of a statue: the concept statue behaves like a sortal concept even if a marble statue remains a piece of marble with a new shape received as an accidental form.

Let us note that, as a consequence of all this, whenever a substance exemplifies a property and, thus, falls under a certain property-concept, no matter whether that property is essential or accidental, the manifestation of that property is due to a form

which actualises some of the potentialities of the matter of that substance. That actuality may be a first actuality, and thus the form responsible for it is a newly received one, or may be a second actuality, i.e. a manifestation of a capacity that that substance already had in virtue of a form it already possessed.²³ Thus, the human soul which is the substantial form of my body and in virtue of which I exemplify humanity and falls under the sortal *man* is a first actuality. Similarly, the shape of a stone which is an accidental form and in virtue of which that stone exemplifies sphericity and fall under the property-concept *spherical* is a first actuality: by possessing it, the object *ipso facto* manifests the relevant property. On the other hand, my capacity to walk is a second actuality: I have it in virtue of my substantial form (it is an essential property of all men), when I manifest it I exemplify the concept *walk*, it is due to the capacity of my substantial form to actualise its matter (i.e., my body) in a certain way, but the having of that form is not *ipso facto* a sign that I manifest that capacity.

The upshot of this distinction is that whenever a thing exemplifies a property, that is because its matter is actualised in a certain manner by a form: if that actuality is a first actuality, the form responsible for it is received from the outside; if that actuality is a second actuality, the form responsible for it is a form (either accidental or substantial) which already structures that substance.

If one holds this conception of substances one may accept also Kim's substance-based ontology of events, but one has to harmonise that theory of events with the idea that the substances involved in events are hylomorphically constituted. Thus, the occurrence of *x* in the canonical description of an event [*x*, *P*, *t*] needs to be reformulated in order to introduce the information that *x* may exemplify the property

²³ Aquinas's distinction between first and second actuality was introduced in section 1.5. It has been clearly explained by Lonergan 1967, 106-151.

P because of an actuality (either first or second) due to a certain form f' ; furthermore, it may be structured by that form since it has a potentiality for it, i.e. because it is the object it is. It is the object it is, on the other hand, because some matter m is actualised according to a certain structure by a form f with the result that x has the disposition to be actualised by f' . Finally, by receiving the form f' , x may acquire a certain end e , which may be the purpose of its activity (in the case of natural objects) or the function for which it was constructed (in the case of artefacts). An example of a natural object could be a man, who is a certain body (i.e., x) structured by a human soul (i.e., f') with the result that that man has life, especially intellectual life (i.e., e), as his end. An example of an artefact could be a knife, which is the mereological sum of a piece of iron and a piece of wood (i.e., x), which receives a certain form (the shape of a knife, with a handle and a sharp blade, i.e., f') and has the function to cut as its end (i.e., p). If the received f' is a substantial form, x will undergo a substantial change and will consequently fall under a different sortal concept. Otherwise, x will undergo accidental change and it will exemplify a new accidental property.

I propose that all this information should be embedded in the notation used to refer to events. An event, given Aquinas's ontology, is the exemplification of some property (either accidental or substantial) by an object due to an actualisation (which may be first or second) of some potentiality of it through the reception of a form (accidental or substantial) in virtue of which it may acquire some end or function. If the received form is substantial, the reception is a substantial change. Thus an event could be expressed by the notation $[x_{mf}, a(f'), P, e, t]$, where x_{mf} is the object which has the potentiality to receive the actuality a by being structured according to the form f' , P is the property which is exemplified as a result of the actuality a , e is the end or function which may be introduced by the actuality a .

Let us note that f (that is the form of x_{mf}) and f' may or may not be numerically identical and may or may not be substantial; hence, there are eight combinatory possibilities.²⁴ In all cases in which f is accidental, x_{mf} is not a proper substance, although it falls under an artefact-sortal concept or a quasi-sortal concept of some other kind, and can be treated like an object. A typical example, as we have seen in chapter one, is that of a statue: although substantially it is a piece of marble, the concept *statue* is an artefact-sortal. When both f and f' are substantial forms, either they are identical, or the actualisation a amounts to a substantial change.

The two places form of the index mf is general, but in some cases not all the two parts which are supposed to fill it exist. For example, some substances may not need to involve the actualisation of some matter. In chapter two, the notion of a subsistent form was introduced. A form of that kind is characterised by that fact that it can exist and perform some of its activities independently and separately from matter. The disembodied human soul is the typical example of this sort of substance. In this case, then, the substance in question has a form and a purpose, but lacks matter. Its index will have to be shortened consequently. Thus, if x is a disembodied human individual, she is an x_f .

Similarly, some substances may exemplify a property without a purpose. A stone, for example. (One cannot object that stones have purposes on account of the fact that they may be used for different ends by animals: when they are used they acquire an accidental function-attributing form, i.e. they become artefacts, but their substantial form remains purposeless). In such cases, an event will take the form $[x_{mf}, a(f'), P, t]$.

²⁴ One could claim that there are only six combinatory possibilities, and that two must be excluded, since when f and f' are numerically identical they cannot be one substantial and the other accidental. However, we cannot rule out a priori the possibility that a thing may undergo substantial change in a way that the same form structures it substantially and accidentally at different stages.

We should now consider whether and how this new characterisation of events affects Kim's explanation of *INUS* conditional relation among events. I would like to suggest that his proposal could be left as it stands, with the only requirements that

A) its explanandum takes the form " $[x_m, f^n, a''(f^n), A, e'', t_i]$ is an *INUS* condition of $[y_{mf}, a(f^n), P, e, t]$ " (or the form " $[x_{f^n}, a''(f^n), A, e'', t_i]$ is an *INUS* condition of $[y_f, a(f^n), P, e, t]$ ", if immaterial substances are involved) and

B) some constraints be put on each set s_i , the realisation of which may be a minimal sufficient condition for the exemplification of property P in the event $[y_{mf}, a(f^n), P, e, t]$ (or $[y_f, a(f^n), P, e, t]$). In particular, in order for a certain event $[y_{mf}, a(f^n), P, e, t]$ (or $[y_f, a(f^n), P, e, t]$) to happen, it is necessary that the following conditions obtain (let us call them '*strict causal conditions*')

- 1) there is some substance x_{mifi} (or x_{fi}) which, by having the act a^i through a form f^i , at a time t^i antecedent to t , exemplifies the relational property A of jointly actualising the members of a non-empty set M of material substances (or immaterial potentialities), which satisfies condition 3 below, through the form f^i - which may be a substantial or accidental form of some substance s and satisfies the condition 2 below; in other words, a polyedie event of the form $[x_{mifi}, a^i(f^i), M, s_f, A_{(x_{mifi}, ai(fi)), M, f^i}, e^i, t^i]$ (or $[x_{fi}, a^i(f^i), M, s_f, A_{(x_{fi}, ai(fi)), M, f^i}, e^i, t^i]$) takes place;
- 2) there is an instantiation of the form f^i - which may be a substantial or accidental form of some substance s - which, at a time t^i antecedent to t^i , exemplifies the relational property S of being disposed to jointly structure the members of the set M , as characterised in condition 3 below, so that

they jointly receive the actuality a ; i.e., a polyedic event of the form $[s_f, S_{gf}, M, a), e^i, t^i]$ takes place;

- 3) there must be a non-empty set M of material substances (if the object involved in the effect-event has the form y_{mf}) or immaterial potentialities (if the object involved in the effect-event has the form y_f) which, at a time t'' antecedent to t^i , jointly exemplify the relational property D of being disposed to receive the form f' , as defined in condition 2 above, through the act of some substance x_{mifl} (or x_{fl}), as defined in condition 1 above. When $f \neq f'$, y_{mf} (or y_f) must be the only member of M , and it may be the only member otherwise (i.e., it may be the only member when $f=f'$, but $a(f')$ does not involve a substantial change, since a is a second actuality); i.e., a polyedic event of the form $[M, f', x_{mifl}, D_{(M, x_{mifl}, f)}, e''', t''']$ (or, $[M, f', x_{fl}, D_{(M, x_{fl}, f)}, e''', t''']$) takes place;
- 4) If the effect-event has the form $[y_{mf}, a(f'), P, e, t]$ (or $[y_{mf}, a(f'), P, e, t]$), as opposed to $[y_{mf}, a(f'), P, t]$ (or $[y_f, a(f'), P, t]$), one of the two must obtain:
 - a) x_{mifl} (or x_{fl}), as defined in condition 1 above, is an intentional agent and there is a state of affairs e which, at a time t'' antecedent to t^i , exemplifies the property E of being the end or purpose of her or his action $a^i(f')$; i.e., the event $[e, x_{mifl}, a^i(f'), E(e, x_{mifl}, a^i(f')), t'']$ (or $[e, x_{fl}, a^i(f'), E(e, x_{fl}, a^i(f')), t'']$) must take place;
 - b) x_{mifl} (or x_{fl}), as defined in condition 1 above, is not an intentional agent and, at a time t'' antecedent to t^i , the form f' of s , as defined in condition 2 above, exemplifies the property E of being disposed to structure teleologically towards an end e any set M' , the members of which jointly have the same disposition to be structured as the members of M ,

as defined in condition 3 above; i.e. the event $[e, s_f, M', E(e, f', M'), t'']$ must take place.

Conditions 1 to 4 depend on Aquinas's metaphysical assumptions, but they are formal, in that all cases of causation among events, if Aquinas's metaphysics is assumed, can fit within them. It may be the case, for example, that x_{mifi} (or x_{fi}) = y_{mf} (or y_f), and this accounts for the possibility of an event in which one causes the actualisation of some property in oneself. Similarly, it may be the case that $f^t = f'$, where f^t is the form of x_{mifi} (or x_{fi}), when something acts on something else and structures it according to its own form (for example, in the process of animal generation).

So whatever event is caused, the minimal sufficient set of events which have to be realised (i.e., the particular s_i , belonging to S_{AP} , each property of which - according to Kim - must be exemplified by some substance, in order for the caused event to happen) must contain three or four events, satisfying the requirements 1 to 3 (if the effect-event has not a purpose e), or 1 to 4 (if the effect-event has a purpose e). This is not a radical modification of Kim's proposal, but an attempt to make it more precise, through the employment of Aquinas's metaphysical outlook, and to offer a more articulated analysis of the identification of events. As we saw above, Kim was aware that his proposal left some questions unsolved, but he believed that this did not need to be a serious worry, since all theories of causation have to face problems analogous to his. In particular he noted that there is a difficulty concerning how to "characterise generally the set of individual events which jointly cause some effect."²⁵ The proposal suggested here goes some way into an answer to this question. If we accept Aquinas's hylomorphism, we know that that set must contain at least three or four events having the forms specified in conditions 1-4. Of course, this is not to say that a *full characterisation* of the desired set is offered, but the

present proposal does seem to specify at least some of the characteristics which that set must have. Each set of events minimal sufficient for a certain effect-event, must thus contain (at least the first three of) the *INUS* conditional events the forms of which are introduced in conditions 1 to 4. Those general forms of events may be given the following names:

- *Efficient INUS condition*, i.e. the event mentioned in condition 1: x_{mif} (or x_{fi}) $a(f')$ -actualises y_{mf} (or y_f).
- *Formal INUS condition*, i.e. the event mentioned in condition 2: the form f' exemplifies the disposition to structure y_{mf} (or y_f).
- *Material INUS condition*, i.e. the event mentioned in condition 3: some matter, contained in M , is available to be structured by f' .
- *Final INUS condition*, i.e. the event mentioned in condition 4: the $a(f')$ -actualisation of y_{mf} (or y_f) has a teleological bearing.

Although, the proposed view was not presented by Aquinas, it is Thomistic in the sense that it attempts to meet contemporary worries by starting from assumptions taken from Aquinas. Furthermore, it is also an attempt to present Aquinas's views with a language and a degree of precision proper to the requirements of contemporary debates. Consequently, the proposed view may offer some hints on how to answer some contemporary worries which did not receive a reply in chapter three. In particular, we needed to explain why Aquinas needs to introduce four "species" of causes, although there is only one kind of causal relation, and how proper causes are different from *INUS* conditions which are not causal, i.e. - in Aquinas's terms - why accidental and proper causes differ. Let us now deal with these problems in turn.

²⁵ Kim 1971, 73.

A reply to the first problem is now easily available. There is only one kind of relation between a cause and an effect: a cause is an at least *INUS* condition of its effect. However, since causes and effects are events, events are exemplifications of properties by substances, and substances are hylomorphically composed, each effect-event requires at least three (or four) *INUS* conditional events, making available the hylomorphical components needed for the substance involved in the effect-event to exemplify a certain property. Each of those three (or four) *INUS* conditional events fulfils a different role in the hylomorphical constitution of the object involved in the effect-event, and, in consequence of this fact, they can receive different names and fit in different species. The species are the four event-forms referred to above.

One could object that this answer overlooks the fact that, according to Aquinas, causes and effects are things and hylomorphical components of things (matter, form, purpose), whereas the proposal presented in this section takes causes and effects to be events. Therefore, either the present proposal is not fully Thomistic, and, consequently, cannot be used to clarify Aquinas's views, or Aquinas's conception of causes was misconceived.

It seems that the first horn has to be disregarded, since Aquinas often uses examples of causal relations which clearly involve events, besides the numerous places where he refers to objects or hylomorphic components. For example, in discussing accidental causes, he notes that

When a pillar hinders the movement of a stone which rests upon it, [...] one [who] removes the pillar is said to move the stone accidentally. [...] The discovery of the treasure is connected with digging in the soil.²⁶

²⁶ *ME*, V, 3, 789: "sicut columna impedit motum lapidis, unde removens columnam dicitur per accidens movere lapidem superpositum alio modo, [...] sicut inventio thesauri [habet ordinem] ad fossionem in terra."

Here, Aquinas seems clearly to hold that the movement of a pillar (accidentally) caused the movement of a stone, and the digging in the soil (accidentally) caused the discovery of treasure. Since his usual examples of causes are things (he takes a sculptor to be the cause of a statue) or hylomorphic components (he takes the form of the statue in the sculptor's mind and the marble to be causes of the statue), it may seem that we must conclude that Aquinas's theory is misconceived.

However, I would like to suggest that the view that both events and things may be causes is not incoherent, if one holds a theory of events like Kim's, in which substances are the basic components of events. First of all, let us note that, in order to explain the *INUS* conditional relation among events, Kim had to define the notion of *INUS* conditionality among properties, on which the former rests. Thus, in his view, $[x, A, t']$ is an *INUS* condition of $[y, P, t]$ if and only if A is an *INUS* condition of P . Since the analysis in terms of *INUS* conditionality is meant to be an explanation of the meaning of ' $[x, A, t']$ caused $[y, P, t]$ ', it seems natural to conclude that the statement ' A caused B ' is meaningful. And, thus, if it makes sense to say that an event caused another event, it makes sense to say that a thing caused another thing.

This conclusion can be extended to things other than properties, for example substances. One of Kim's examples of ' $[x, A, t']$ caused $[y, P, t]$ ' is 'My striking of the match caused its lighting.' If my striking caused a certain event, however, it seems natural to claim that I caused it. In the example, 'I caused the lighting of the match' seems to make perfect sense. The occurrence of 'I' here, on the other hand, does not seem to be just a shortened version of the expression 'my striking of the match', since 'my striking of the match caused its lighting' implies 'I caused the lighting of the match', but the reverse is not true, since there are several actions which I could have performed to reach that effect. It may be suggested, then, that the reason why 'I

caused the lighting of the match' is meaningful and correct is that when an event is a cause of some effect, also its component parts (a substance and a property) are causes of its effect. A similar case can be made for effects, at least when the form acquired by the relevant substance in order to exemplify a certain property is substantial (or artefactual), such as in 'my sculpting caused the marble to turn into a statue', which is paralleled by 'my sculpting caused the statue.'

If all of this is correct, it can be suggested that the hylomorphic components of substances involved in cause-events and effect-events can be causes and effects as well as events. Furthermore, like the *INUS* conditional events described in conditions 1 to 4 fit in the four Aristotelian species of causes, this can be said of their components and their hylomorphic constituents. x_{mfi} (or x_{fi}) and $a^{(f)}$ are efficient causes, like 'I' and 'a striking of a match' are parts of the event referred to by the term 'my striking of a match', and they can be said to cause the lighting of the match. f and s_f are formal causes of the structure of the property exemplified in the effect-event; for example, the structure and features of the match are causes of the structure and the features the flame which resulted. A set M containing appropriate items is also a cause, since the reception of the form through the action of some agent requires an appropriate "subject" which is disposed to receive it. Thus, the match which I strike is the only member of M , and it ignites when the other conditions obtain. The purpose e , for which one acts, is a cause of the resulting effect. For example, the reason for which one needs some fire, is a cause of the lighting of a match.

Let us now return to the second problem left over from chapter three, concerning the criterion to distinguish real causes from other *INUS* conditions. In chapter three, we saw that part of the meaning of ' A caused B ' is that A is also an at

least *INUS* condition of *B*, but there is more to it. What differentiates proper causes from mere at least *INUS* conditions? We have also seen what one of Aquinas's answers could be the following: only *per se* causes are proper causes, whereas accidental causes are only *INUS* conditions. In fact, according to Aquinas, if Mark is the efficient cause of a statue, and Mark happens to be white, Mark's whiteness will also happen to be a cause of that statue. If we think of causes as being also at least *INUS* conditions of their effects, it is easy to see why he could have thought that: if Mark is white, the whiteness that he exemplifies is part of an event comprehended in a minimal sufficient condition of the effect (the statue).

Although this explains why accidental causes can be thought of as causes, it does not offer a criterion to distinguish them from proper *per se* causes. The example may suggest that the fact that the accidental cause was a supervenient property of the actual cause may be relevant, and it is probably so; but the fact of superveneing on a cause cannot be a necessary and sufficient condition for a property to be an accidental cause, since there may be accidental properties which do not supervene. An example taken from Aquinas may be this: assuming that the sculptor Polycletus sculpted a certain statue, Polycletus is an accidental cause of the statue, whereas a sculptor (who happens to be him) is its efficient cause. In this case, the fact of being Polycletus does not supervene on the fact of being a sculptor, yet Polycletus is said to be an accidental cause in virtue of the fact that a sculptor is a *per se* cause.

At this point, however, a proposal on how to differentiate accidental causes from *per se* causes is available. Since Kim's conditional analysis of causation involves a substance-based ontology of events, and since Aquinas'shylomorphism leads to the idea that substances and their hylomorphic components can be causes and effects, it may be argued that the causes of an event *e*, in a strict sense, are those

events (and their components) which are responsible for the hylomorphic composition of e . Thus, all the events which are *INUS* conditions of e and satisfy one of the above conditions 1 to 4, are proper causes of e . All the other *INUS* conditions which form a set of events minimally sufficient for e are not causes, or - in Aquinas's terms - are accidental causes.

We need to note that the expression 'hylomorphic composition of e ', which was just used above, may seem problematic, since, one may contend, the present proposal is grounded on the idea that substances, not events, are hylomorphically composed. To this, however, it can be replied that the hylomorphic components of substances are also components of the events where the substances which they constitute them are involved, for the reason, considered above, that causation occurs both between events, between the substances involved in those events, and between the components of those substances.

One final remark about accidental causation is needed. We have already noted in chapter three that, according to Aquinas, an accidental cause may not be an accident, but a substance, whereas a *per se* cause may be an accident. For example, the proper cause of a statue needs to be a sculptor, although a sculptor does not need to be a man, or an animal, but could be a machine (say a robot); on the other hand the fact that the sculptor of a certain statue is a man, or even a certain man (say Polycletus) is an accidental cause. This possibility is granted by the present proposal, through the fact that, as noted above, the substances involved in events do not need to satisfy all the criteria for the identity of substances, put forward in chapter one. The objects $x_{m''f''}$ and y_{mf} , involved in the events $[x_{m''f''}, a''(f''), A, e'', t_I]$ and $[y_{mf}, a(f'), P, e, t]$, need not be substances in a strict sense, since $x_{m''f''}$ and y_{mf} may result from the structuring of m'' and m (which could be themselves substances, or sets of

substances, is the strict sense specified in chapter one) through the accidental forms f'' and f , respectively. For example, the two events could be the sculpting of a sculptor and the realisation of a certain shape in the marble involving a certain statue. In this case, both the objects involved in the two events are not substances in a strict sense. The matter of the object involved in the first event, m'' , could be Polycletus, and its form f'' could be that giving Polycletus the property of being a sculptor: the hylomorphic composition of m'' and f'' , then, would be an accidental object, not a substance in a strict sense. Similarly, the object involved in the second event, a statue, is not a substance in a strict sense, but it is composed of a real substance, the marble, and an accidental form, i.e. a certain shape, as discussed in chapter one. Another example could be that of the cruelty of an army causing the destruction of a foreign nation. The object involved in the cause-event, an army, is not a substance in the strict sense, although thus are the members of the set constituting its matter (i.e., all the individual soldiers). Similarly the object involved in the second event, a nation, is not a substance in the strict sense, although thus are some of the members of the set constituting its matter (i.e., the citizens, but not the buildings and the territory).

In conclusion, the differences in the degrees of substantiality which were noted in the cases of substances, and their principles of organisation, i.e. forms, shows up also in the events in which substances are involved, and this leads to the peculiar fact, noted by Aquinas himself, that accidents may be proper causes, and substances may be accidental causes. The present proposal seems to have the resources to accommodate this feature of an ontology of events based on Aquinas's theory of substances.

4.3 Formal Causation

The theory of causation and causal *relata* proposed in the present and the previous chapters makes sense of the notion of formal causation. Let us recall that formal causation is one of our main concerns, since it is a central notion in Aquinas's theory of mental representation. The epistemological advantages of that theory, though, are normally taken to be jeopardised by the obscurity and obsolescence of the notion of formal causation. The reconstruction and implementation of Aquinas's views on causation offered above aim precisely at the elucidation of that notion in view of its employment in a theory of mental representation. Let us now turn, thus, to a closer analysis of formal causation.

Causation is a relation among events, but events are exemplifications of properties by substances.²⁷ Since substances exemplify properties (essential and accidental) in virtue of their forms (substantial and accidental, respectively), causation involves always the reception of a form, or the actualisation of a second actuality which the relevant substance already has potentially. Since the actualisation of a form cannot happen independently from the act of an agent (efficient causation) and the actualisation of potentialities of some substratum (material causation), formal causation loses the halo of mystery which contemporary philosophers usually take to enfold it. Formal causes can never be independent of efficient causes, and may be independent of material causes only in cases involving immaterial substances. If

²⁷ Someone could contend that there are apparent exceptions to this claim, such as a noise, a sound, a flash, an odour, a breeze. I believe that these are not genuine counter-examples and that in all cases there is some substance manifesting a certain property, although the substance involved may not be a substance in the strict sense. For example a noise, a sound or an odour need to be the noise, the sound or the odour of some object. Also a breeze or a lightning need to involve a motion of some region of atmosphere, or air. This reply may assume that sounds, odours, and other traditional secondary properties cannot be reduced to physical events. I argue for a view to that effect in De Anna 2002.

those cases are problematic, on the other hand, the trouble is not with the notion of formal causation, but with claims concerning the existence of immaterial substances.

In section 1.5, we saw that according to Aquinas, a form may exist in reality only as an individual, i.e. as the form of a particular substance. In the account of causation proposed in this chapter, on the other hand, the claim was made that *an instantiation* of the form in virtue of which the effect-event occurs must contribute in an appropriate manner to the constitution of an *INUS* condition of that event (cf. condition 2 in section 4.2 above). For example, the formal *INUS* condition of the event $[y_{mf}, a(f'), P, e, t]$ is the event $[s_f', S_{(f', M, a)}, e', t']$. The claim was that, depending on features of individual cases, f' in the effect-event and f' in the cause-event can either be two instantiations of the same form, or be numerically identical. They are numerically identical, for example, when f' is a form which already structures the object y_{mf} when the object x_{mif} actualises, through a second actuality, a property which y_{mf} already had potentially. The problem now is the following: when the two occurrences of f' (i.e., that in the cause and that in the effect) are not numerically identical, how is it possible that f' - an individual form - may have two instantiations, one in the form and one in the effect?

An answer to this difficulties requires a better understanding of the relationship between individual forms and universals. In commenting Aristotle's *Metaphysics*, in particular the definition of "formal cause" put forward in book five, Aquinas writes that

the formal cause [...] is related to a thing in two ways. In one way it stands as the intrinsic form of a thing, and in this respect it is called the formal principle of a thing. In another way it stands as something which is extrinsic to a thing but it is that in likeness to which it is made, and in this respect an exemplar is also called a thing's form. Moreover, because it is from its form that each thing derives its nature, whether of its genus or of its species, and the nature of its genus or of its species is what is signified by the definition, which expresses its

quiddity, the form of a thing is therefore the intelligible expression of its quiddity, i.e. the formula by which its quiddity is known.²⁸

Here Aquinas seems to say that there are three things which may count as causal forms of a thing: a) the individual principle of organisation which structures its matter, b) a Platonic exemplar, universal and existing independently from all individual things which partake of it, and c) the content of a definition of a thing, i.e., the universal concept existing in a mind.

It is interesting to note that Aquinas lists three things, whereas the passage by Aristotle on which he is commenting overlooks Platonic forms. This does not mean, however, that he objected to Aristotle and held the view that all these three things are causal forms; the reason why he mentions all of them at this point may have to do only with the fact that Aristotle did not mean to discuss these views at this stage of his *Metaphysics*. In book five, Aristotle collects the definitions of all major key-concepts to be discussed in metaphysics. Further on, in book seven, he will discuss form and matter extensively. It is plausible to argue that Aquinas thought that, in setting up a definition of formal causes, the proposals of all major philosophers had to be taken into account, and that only after a proper discussion the decision to overlook or ignore some could be taken. Thus, probably, he mentions also the Platonic thesis that separate forms are the causes of things. Further on in his commentary, however, he seems to agree with Aristotle that the Platonic proposal has to be disregarded: in lecture three of book seven of *ME*, indeed, he considers all

²⁸ *ME*, V, 2, 764: "causa formalis, quae comparatur dupliciter ad rem. Uno modo sicut forma intrinseca rei; et haec dicitur species. Alio modo sicut extrinseca a re, ad cuius tamen similitudinem res fieri dicitur; et secundum hoc, exemplar rei dicitur forma. Per quem modum ponebat Plato ideas esse formas. Et, quia unumquodque consequitur naturam vel generis vel speciei per formam suam, natura autem generis vel speciei est id quod significat definitio, dicens quid est res, ideo forma est ratio ipsius *quod quid erat esse*, idest definitio per quam scitur quid est res."

the Aristotelian arguments against the Platonic view, and rejects only one of them, which seems to entail that agreed with the rest of them.

We are, thus, committed to the view that, according to Aquinas, both individual principles of organisation which structure particulars and the conceptualisations of them in a mind may be causes. Although the account of event-causation proposed in this chapter has mentioned only individual forms (e.g., f') as causes, it may be suggested that it is coherent with Aquinas's views nonetheless. In fact when the formal *INUS* conditional event of a effect-event occurs, i.e. an event of the form $[s_f, S_{(f', M, a)}, e', t']$ occurs, there must be a substance s_f which is structured by f' - no matter whether substantially or accidentally. On the other hand, when an s_f is structured by f' , it falls under the concept F , i.e. a concept which is the abstraction of f' , and under which fall all the things which are structured by f' in the same way in which s_f is structured by f' . (In fact the same form may structure different kinds of matter in different ways, depending on the kind of disposition that each kind of matter has towards that form. For example, the same form may have natural existence in some kinds of objects, and intentional existence in others. As a consequence, different kinds of things which are disposed towards the same form in different manners, may fall under different concepts when they are structured by that form).

It follows that, at any time t' when an event of the form $[s_f, S_{(f', M, a)}, e', t']$ occurs, an event of the form $[s_f, F, t']$ must also occur. In this way, though, F must be an *INUS* condition of P , i.e. the property exemplified by the effect-event $[y_{mf}, a(f'), P, e, t]$. As we have seen in the previous section, this may be a reason to claim that F is a cause of P , or even that F is a cause of $[y_{mf}, a(f'), P, e, t]$. This, on the other hand, accommodates the claim - suggested by Aquinas - that concepts of things, their

abstracted forms, may also be causes. The reference to the concepts of things, here, does not imply that the thoughts of things are causes of whatever effects those things are causes of. This, of course, would entail that the mind has mysterious causal powers and that the mere fact that we think about some events may change the structure of minimal sufficient conditions of events which would otherwise be completely unrelated to us. Rather, the formal features in virtue of which those things are thinkable and, consequently, fall under certain concepts, are themselves causes.

It seems, thus, that the view proposed in this chapter is consistent with the idea that both individual principles of organisation and universal concepts are causes. We still need to explain, however, how f' may have two instantiations which are not numerically identical. They cannot be numerically identical, otherwise they would be an entity independent from each individual substance structured by them, and thus they would be a Platonic universal; Aquinas, however, cannot accept this possibility, as mentioned above. A solution is that we should not think of a form as an individual, nor as an universal. It is not an individual, since individuals are individuated by matter, but forms are not actualised matter by definition. On the other hand - outside the mind - forms cannot exist unless they structure some matter, and, thus, hylomorphically constitute some individual substance.

The status of forms is probably not as mysterious as it may seem, if one thinks of them in analogy with isomorphic structures. Two things may be isomorphic, for example, because their parts may be in a 1-1 correspondence. We can say that they have the same structure, although that structure cannot exist by itself independently from a thing, or from any other means or medium that we may decide to use to capture it. At the same time, however, we cannot claim that the form is an individual, since what differentiates its instantiations in all the individuals is the particular stuff

which constitutes them, and this has nothing to do with the structure itself, which remains identical in all cases. Because of this peculiar status, we should take forms to be identified by their isomorphic properties, and to be capable of being instantiated in several individuals. Consequently, although each form is an individual since it is the form of some individual, it is identical to the forms of all the individuals isomorphic to that. The identity involved, is not numerical identity, but *formal identity*.

The analogy with isomorphism may also help to explain another feature of Aquinas's conception of forms which may seem puzzling. As we have seen in the last quote from *ME*, Aquinas takes both the species and the genera to be forms and causes of a thing. Thus, the causes of an individual man would include the species *man* and the genus *animal*. Why this may be so can be explained through an analogy with the fact that isomorphism may be partial and come at different degrees. Let us suppose that we want to construct isomorphisms among the following sets by putting in a 1-1 correspondence identical numbers: $a=\{1, 3, 5\}$, $b=\{1, 2, 3, 5\}$, $c=\{1, 3, 5, 6, 7\}$, $d=\{1, 2, 3, 4, 5\}$. We can say that the isomorphism between a and any other set holds also among any pair of sets, although the same cannot be said about the structure of the other sets. Furthermore, d has the structure of b , but the contrary is not true. Finally, the structure of a can be found in all the other sets, and the structure of b can be found in d , but cannot be found in c . We could express this by saying that there is a certain degree of isomorphism between a and any of the other set, but a higher degree of isomorphism must exist between b and d .

Similarly, we may say that the abstracted form *animal* is partially identical to the abstracted forms *man*, *cat*, *dog*, etc., which are at a higher degree partially identical to an individual man, an individual cat and an individual dog, etc.,

respectively. On the other hand the abstracted form *living thing* is partially identical to a greater extension of objects, although the partiality of that identity would also be greater.

In conclusion, it seems that Aquinas's metaphysical views and his intuitions on the nature of causation may square with some basic requirements that emerged in contemporary debates and any satisfying account of causation must meet. In the last two chapters I have tried to argue that Aquinas' theory of causation has the resources to meet those requirements and, thus, it is much more plausible than one might expect at a first glance.

Chapter Five

Cognition and Formal Causation

5.1 Aquinas on the Cognitive Process

In the previous four chapters, I have tried to explain and defend Aquinas's views on causation. This required an analysis of his metaphysical views on the hylomorphic constitution of reality (chapter one) and on the possibility of forms existing apart from matter (chapter two). The latter was focused upon the case of humans, who are essentially material beings, but are also capable of existing apart from matter. We have also seen that Aquinas took causal relations to be conditional relations. The best way to analyse causal relations conditionally, though, seems to be in the terms of Mackie's account of causality (chapter three). Although Aquinas's views on causal relations may be compatible with Mackie's, however, they diverge from those of Mackie in that Aquinas takes causal *relata* to be ultimately the hylomorphic components of substances, rather than the events in which substances are involved. We have also seen that the possibility of purely formal substances, such as God, angels, and disembodied humans, leaves open the possibility of causation occurring among non-material entities (chapter four). The resulting view seems to be a philosophically defensible position, thus capable of being employed in a theory of mental representation.

In fact, the distinctive character of Aquinas's theory of cognition depends on his attempt to explain mental representation as a process in which the mind becomes

formally identical to the world, through the causal action of the world upon the (human) cognitive powers. This is an idea recently supported by various English-speaking philosophers,¹ which has attracted the attention and, to an extent, the favour of the community of analytical philosophers, on account of its epistemological merits.² Its main attraction has to do with the fact that it offers an appealing way to maintain the intuitions developed by causal theories of cognition (i.e., theories according to which cognition consists in the mastering of representations caused by external things), while avoiding the problems normally associated with them. In particular, it overcomes the difficulties of causal theories which were famously exposed by Putnam's permutation arguments. In Haldane's words:

Even if a complete representationalist account of thought must make a connection between a subject's internal states and the external world [...] the connection can only be *extrinsic*, a matter of efficient causation.[...] Clearly input from the world is relevant and is in part at least a matter of efficient causation. However, if there is to be the sort of conformity of mind to thing which Putnam and McDowell seek [in order to avoid the problems highlighted by the permutation argument], then I can only see this being provided according to an account of the sort developed by Aquinas when he writes that the intellect in act is the intelligible in act; or less scholastically, that a thought will only be of a thing when it is formally identical with it; when what we think of and what is thought are the same.³

The problem highlighted by the permutation argument is that no matter how finely the causes of representations are specified, causal theories will always fail to fix the references of representations, in part because there will always be clearly deviant causal lines which satisfy all the specified requirements, in part also because conceptual identification is more finely-grained than causal individuation. (For example, trilaterality and triangularity cannot be distinguished in terms of their causal powers, or those they bestow on their instances, yet they are conceptually

¹ Haldane 1989a, 1989b, 1992b, 1993a, 1993b, 1996, 1997b, 1998; Jacob and Zeis 1997.

² Putnam, 1995, first part. For a reconstruction of the debates on Thomistic epistemology in analytic philosophy see De Anna 2001, chapters three and four.

distinguishable). The reason ^{for} of this problem, according to Haldane, is that causal theories do not consider the relevant semantic relations which need to link the thinker to the object of thought. The notion of form becomes useful at this point: it is the fact that a certain thought and a certain object are formally identical which makes that thought a thought of that object. Among all causal lines responsible for the occurrence of a certain representation, the only semantically relevant one will be that which accounts for the form of the content of the representation. That causal line, however, cannot be merely a case of efficient causation, it needs to be also a case of formal causation.

In the previous chapters, I have tried to explain and defend the idea of formal causation within Aquinas's hylomorphic metaphysics. In the present chapter I will consider how the resulting theory of formal causation may be employed to account for the cognitive process.

Aquinas dealt with the problem of cognition in all his main philosophical works, but his major and more comprehensive treatments of it are expounded in the commentary on Aristotle's *De anima*, especially in the second half of book two and in book three, in the *Summa theologiae*, *questiones* seventy-eight to eighty-nine, and in the commentary on Aristotle's *De sensu et sensato*. In what follows we will deal with the role of formal causation in perception (section two), and in thought (section three), but before getting into that we will have a brief view of Aquinas's account of the cognitive process. Our attention will be focused mainly on the commentary on the *De anima*, where the whole cognitive process receives the most extensive treatment.

Following Aristotle, Aquinas notes that, in cognition, the mind (or whatever faculties we would call by that name) is in contact with a reality different from itself

³ Haldane 1998, 266-7

and, in some ways, ends up containing that reality 'in' itself. Consequently, "the soul is in a way all existing things."⁴ Subsequently, Aristotle distinguishes two kinds of objects, sensible objects and intelligible objects, that is objects of perception and objects of thought. He contends that, consequently, the soul must have two faculties, each one of which is the capacity to know one of the two kinds of objects. Furthermore, since it seems indisputable that a large part of the objects known by the intellect depend in different ways upon what is perceived, the two cognitive faculties must be somehow connected. The major efforts of Aristotle and his commentators to explain cognition are carried out under these assumptions. The major task, therefore, will be to define the relation between the two faculties and to illustrate in what way the soul "is all things."

At this point, one may already suspect that Aquinas could be charged of inconsistency, if the interpretation of his views on universals supported in chapter two above is correct. Let us recall that in chapter two Aquinas was attributed a view according to which the immediate objects of thought are not universals, intelligible objects, since these are the media, not the objects of cognition. The objects of cognition would be the actual individuals (possibly) existing in the world. If this is true, one could object, how can Aquinas follow Aristotle in holding the view that there are two kinds of objects of cognition, i.e. sensible object and intellectual objects? To this it can be replied, however, that Aristotle's claim about two kinds of objects of cognition could be the result of the reflection on perception and thought, which results in the recognition that the former has to do with individuals (sensible objects) and the latter with universals (intelligible objects). The term 'objects', then would not be used in a strict sense, since the sensible and intelligible objects here referred to would not be what (*quid*) one cognises, but the things through which

⁴ *De anima*, 431 b 21.

(*quo*) one cognises. This does not mean that the term 'objects' is equivocated by Aquinas: at this initial stage of the *De anima*, Aristotle is just appealing to the intuition according to which there are two kinds of cognition, which appears clear if one realises that one can cognise both individuals and universals. Aristotle and Aquinas could qualify this distinction as a reflection on the process of cognition, i.e. on the sensible and intelligible forms which exist intentionally in the cognisant, only after a full development of the theory of cognition, which has not been carried out yet at this stage. In a more theoretically sophisticated Aristotelian manner, the same point could be expressed by saying that the sensible species and the intelligible species are objects only of acts of second intention, i.e. objects of self-reflective thought.

Concerning perception, Aristotle notes that one perceives substances, such as a particular man, tree or book. The five senses, though, are not sensitive to humanity, nor to the property of being a book or to that of being a tree. The five senses are only sensitive to objects, which are qualities of substances, but are not substances themselves, like colours or shapes. The experience of a particular which has the property of being a certain substance, nonetheless occurs through the perception of its non-substantial properties, which the senses are sensitive to. Thus, Aristotle distinguishes between *per se* objects of perception, which are sensed directly, and *incidental* or *per accidens* objects of perception, which do not act directly on the senses but are perceived nonetheless.⁵ Let us consider an example: when we look at a cat, our eyes are sensitive to some colours, some shapes, some movements. These are *per se* objects of our sight. Yet, we perceive a cat, i.e. a material particular of a certain sort. The property of being a cat does not act on our senses directly, but it is

⁵ *Ibid.*, 418 a 21-4; see also 425 a 24-9.

cognised through the *per se* objects of perception. That is why it is an incidental sensible object.

A distinction has to be drawn also among *per se* sensible objects. Some of them can only be perceived by one of the senses, like a colour by sight, an odour by smell, a sound by hearing, a flavour by taste, and hardness or roughness by touch. Aristotle calls them *proper sensible objects*.⁶ Other sensible objects can be sensed by different sense modalities: the shape of an object may be perceived through sight, but also through touch; the motion of a body may be touched, seen, or, under some circumstances, even heard. These qualities which are perceivable by several modalities are *common sensible objects*. Aristotle individuates five of these: motion, rest, number, shape, and size.

As mentioned above, Aristotle needs to explain in what way the soul (or the mind) may become all cognisable things. He explains this fact by noting that in perception the sense receives the form of a perceived object, "as wax receives the imprint of the ring without the iron or gold, and it takes the imprint which is of gold or bronze, but not *qua* gold or bronze."⁷ In this kind of reception the sense is passive, namely it does not act by itself in the production of its own objects, but "in each case the sense is affected by that which has colour or flavour or sound."⁸ Furthermore, Aristotle adds that the action of objects on the senses does not happen "in so far as they [a golden ring or a bronze ring] are what each of them is spoken of as being, but in so far as they are things of certain kinds and in accordance with their principle."⁹ This means that the *per se* sensible object received by a sense organ is not the essence of a thing, but it is one of its properties; however, that thing has that property

⁶ *Ibid.*, 418 a 11.

⁷ *Ibid.*, 424 a 19-20.

⁸ *Ibid.*, 424 a 20-21.

⁹ *Ibid.*, 424 a 21-23.

in virtue of being structured by a certain principle of organisation, i.e. of having a certain essence. This is consistent with the claim, considered above, according to which a *per se* object of sensation is a quality of a substance, since a substance, as such, can only be an incidental object of perception. In his commentary (*CDA*), Aquinas notes that the form of the material particular is received in the mind (or soul), even if it exists differently in the mind than in the external object. In the external object it exists *naturally* or *materially*, whereas in the mind it exists *intentionally* or *spiritually*. This does not entail that the intentional existence does not require a material substratum. Quite the contrary: sensation is an activity of a sense organ. All that speaking of 'spiritual existence' amounts to is the fact that forms existing intentionally are not principles of the organisation of matter in the same way in which they are when existing naturally.¹⁰

These claims about intentional existence raise an issue concerning their explanatory role in a theory of cognition. It seems, in fact, that they are meant to *explain* cognition, otherwise it would be hard to see what the purpose of speaking of the distinction between natural and intentional existence would be. If that is the case, intentionality would be a criterion for cognition: a cogniser would be – unlike non-cognisers – an object capable of containing forms of other things existing intentionally in it, while maintaining its own substantial form naturally. This natural line of reasoning has, though, as Pasnau (1997, 47-60) pointed out, to face a difficulty: Aquinas claims that forms exist intentionally both in the senses *and* in the media of perception (e.g., air or water in the case of sight). Consequently, were the claims on intentionality meant to offer a criterion for cognitivity, air and water would turn out to have cognitive powers, although "it is obviously not plausible to accept

¹⁰ *CDA*, III, 2, 26 ff.

the conclusion outright.”¹¹ According, to Pasnau, on the other hand, “the persistence with which Aquinas advances [his claims on intentional existence] as a criterion makes it hard to see how we could refuse to take it seriously.”¹²

Elsewhere (De Anna 2000b) I have argued that, although it is disputable even that Aquinas meant to offer a criterion for cognitivity through his theses on intentional existence, in the main passage where he seems to do that,¹³ he speaks of the form (*forma*) and the species (*species*) of a thing existing in the cogniser, whereas while mentioning intentional existence in *media* (air and water) he refers to the likeness of a thing (*similitudo rei*)¹⁴ or to a form of a colour (*forma coloris*).¹⁵ Although this may seem a small terminological detail, I argued that it is quite decisive: the *forms* of species of things are *per accidens* objects of perception, i.e. the essences of individual things, whereas the *likeness* of things or the forms of colours (or whatever other sensible property) are *per se* objects of perception, i.e. forms of accidental properties of things. Consequently, when Aquinas claims that cognisers are those beings which may contain forms of other things existing intentionally in themselves, he does not refer to accidental forms of things, but to substantial forms of concrete particulars. The criterion he would be offering, then, would rule out air and water, which do not contain the substantial forms of things, but only some of their accidental forms (e.g., the forms of colour and shape). Cognisers, on the other hand, would be those beings, which are capable of containing the substantial forms of other things in themselves, that is, of grasping the essences of external things. In the same essay, I suggested that grasping the essences of other things requires capacities of meaning attribution to the contents of sensory

¹¹ Pasnau 1997, 50.

¹² *Ibid.*

¹³ ST I, q. 14, a. 1, c.

¹⁴ CDA, 2, 7, 18.

experience, and this, in turn, is possible only for beings which can be aware of their sensory states, have propositional attitudes, and are capable of selective attention and reflexive awareness.¹⁶

Besides these reasons of principle, however, it is clear that awareness is required in the first stages of the cognitive process within the Aristotelian theory of perception: Aristotle certainly means this with other claims about the details of his account, which we can now turn to. According to him, a subject's awareness of his own perceptual states is a result of the fact that the sense is in act, i.e. that it is actualised by a certain sensible object, and no further faculty has to be introduced. If we see red, our awareness of redness depends on our sight being acted upon by a proper sensible object and we do not have to suppose that it results from some other sense modality perceiving our perception. In fact, had we to suppose that, we should introduce also a further faculty perceiving both redness and our perceiving redness, and we would end up in an infinite regress. On the other hand, in order to avoid that, we could introduce a faculty capable of perceiving its own perceiving, but then "we had best admit this of the first of the series."¹⁷ This argument seems convincing: reasons of economy of explanation prevent us from introducing more sense faculties than are strictly needed for an explanation of perception. Thus, we need to admit that each sense modality perceives its own perceiving - i.e. is aware of perceiving - when

¹⁵ *ST*, I, 56, 2, ad 3.

¹⁶ Cf. De Anna 2000b. My conclusion, therefore, is contrary to Pasnau's most generous interpretation of Aquinas's criterion, according to which cognisers would be characterised by the fact of having very complicated patterns of managing forms existing intentionally in them. According to this interpretation of the criterion, computers turn out to be cognisers (Pasnau 1997, 57). In mine, computers would not have cognition, instead, since they lack awareness, and, therefore, are incapable of reflexive awareness. Haldane (1989b) proposed a strong argument to the effect that reflective awareness is a necessary condition for intentionality: unless one is aware of at least some mental states one cannot form concepts through selective attention. Selective attention requires consciousness and the capacity of reflexive awareness, since several concepts can only be mastered if one can refer to oneself.

¹⁷ *De anima*, 425 b 16.

it is in act. Awareness, thus, is an immaterial property of material things which are suitably structured for perception by their substantial forms.

At this point, however, we must recognise that we can perceive that different kinds of *per se* proper sensible objects (colours, smells, etc.) are different. Consequently, we need to admit that there is a faculty of the soul which merges together and compares sensations coming from different sense modalities. Aristotle's argument is particularly clear:

Since we judge both white and sweet and each of the objects of perception by reference to each other, by what do we perceive also that they differ? This must indeed be by perception, for they are objects of perception. [...] Nor indeed is it possible to judge by separate means that sweet is different from white, but both must be evident to one thing. [...] The same thing then asserts this; hence, as asserts this so it both thinks and perceives. That, therefore, it is not possible to judge separate things by separate means is clear.¹⁸

Medieval commentators, including Aquinas, have interpreted this conclusion as the introduction of a common sense modality which collects and unifies data coming from the external senses. Let us note that the expression 'common sense' - which is often used to refer to this faculty - has no implication concerning the perception of common sensible objects - which were mentioned above.¹⁹ Rather, it is a faculty which perceives all the *per se* objects (both proper and common) of the five sense modalities and merges them together into complex unities, which higher cognitive faculties may subsequently interpret as objects of certain kinds, i.e. as the substances which are the *per accident* objects of perception.

Aquinas called phantasms (*phantasmata*) such perceptual unities, and introduced two faculties which are capable - respectively - of retrieving and articulating them, notwithstanding the absence of actual stimulations of the senses:

¹⁸ *De anima*, 426 b 11-22.

¹⁹ Aristotle and several of his commentators explicitly deny that there is an internal sense the role of which is to perceive the common objects: cf. *De anima*, 425 a 14 - b 12.

memory (*memoria*) and fantasy (*phantasia*). Even though phantasms contain all the information needed to comprehend what sort of objects they represent, Aquinas claimed that the mere perceiving them by the common sense is not sufficient for that comprehension;²⁰ thus, besides the common sense, he follows Aristotle and introduce a higher faculty, i.e. the intellect.

Aquinas had two main reasons to claim that the common sense cannot comprehend. The first is that perception can never go wrong, whereas comprehension may be mistaken, at least as far as judgements are involved:

Incorrect understanding [...] results in spurious science or imprudent decisions or foolish opinions. Sensation, on the other hand, can only be "correct", for the senses are infallible with respect to their proper objects.²¹

This leads to the conclusion that the faculty which receives phantasms and the faculty which does the thinking are distinct. This argument is contentious for at least two reasons, the first being purely philosophical, the second concerning the overall coherence of Aquinas's views.

According to the first objection, the claim that the senses are infallible is problematic since it seems that there are some obvious counterexamples, such as hallucinations and illusions. In that case, the alleged difference between the common sense and the intellect, which grounds the claim that they are distinct faculties, disappears. An obvious attempt to save Aquinas's argument would be that of interpreting his problematic claim as a reference to privileged access: hallucinations and illusions would go wrong as interfaces to the world, i.e. as perceptions, but

²⁰ This is the point made by Aquinas in CDA, III, 4. Contrary to his view, some commentators have argued that the common sense can by itself grasp the essences of things contained in *phantasmata*: cf. Gaffney (1942) and Ryan (1951). Their intent seems to secure a shortcut to realism and to avoid the (possibly transcendentalist) complications involved in Aquinas's views on the role of the active intellect in abstracting universals. Schmidt (1983) showed that such interpretations are unacceptable. I have critically discussed this debate in De Anna (2001, 173-6).

would offer to the hallucinated or deceived person privileged and infallible access to a private realm of perceptual objects, e.g. sense data. However, this line of defence would seem to be unavailable to Aquinas, since, as noted in chapter two, and as we shall see in further depth below, he took perceptions and thoughts to be the media of cognition, not the objects of cognition. Perception, consequently, cannot present sense data, or percepts of any sort, but real external things.

I would like to reply that the proposed line of defence is in fact available to Aquinas, since he could hold that we can be acquainted with external objects in cases of normal perception, and with sense data or percepts or *phantasmata*, in his terminology, in cases of deception. There is nothing incoherent in the thought that in cases of normal perception the perceived objects are not objects of the same kind as those perceived in hallucinations and illusions, as Austin famously contended against sense-data theorists: one could even think of hallucinations and illusions as perceptual states which lack objects.²² This way of thinking seems particularly close to Aquinas's, according to whom (as we shall see in next section) in perception the reception of a form consists in the senses being activated according to the form which structures the external object of perception. This leaves space for the possibility that a sense organ may be activated just *as if* there were an external object with a certain form, although the real cause of its activity is unusual, i.e. is different from what normally activates it in that way.²³

²¹ Cf. *CDA*, III, 4, 630 : "*Non recte autem contingit intelligere [...], idest secundum falsam scientiam, et secundum imprudentiam et secundum opinionem falsam. Sentire autem non contingit nisi recte, quia sensus circa propria sensibilia semper verus est.*"

²² Austin 1962, 63 ff.

²³ 'Normally' in this sentence has a normative meaning, not a statistical one. It may even be that someone's sense organs are constantly non-normally stimulated, for example since he is a brain envatted by an evil scientist (of course, then we need 'sense organs' to have a sense wide enough to include the relevant parts of the brain cortex; Aquinas himself, on the other hand, suggests that the common sense have their organs in the brain; cf. *QDV*, 18, 8, c). What normality depends on, in this case, is what a sense organ is made for, i.e. what its role in the cognitive process is meant to be, without any teleological presumption involving a design of nature rather than a mere emergence of

The second objection to Aquinas's argument has to do with the coherence of his views. As we shall see, according to him the intellect is capable of two distinct operations, understanding and judgement. The former is the comprehension of the essences or natures of things, i.e. the capacity to form concepts, the latter is the capacity to employ concepts to formulate judgements, i.e. propositions. At several points, he claims that the understanding can never be mistaken, whereas judgements can be true or false. (Again, more will be said about this shortly: for the present purposes we can just assume his view). The problem now is that one may wonder why the fact that perception is always correct whereas judgement may be mistaken, should be the ground for a twofold distinction of faculties (i.e., between the common sense and the intellect), but understanding and judgement – which also are one necessarily correct and the other liable to falsity – may belong to the same faculty (i.e., the intellect). A reply may be suggested by offering a more sophisticated interpretation of Aquinas's argument. The common sense and the intellect – it may be contended – are asymmetrical since the objects of the intellect can be acquired in a manner which is not open to mistakes (i.e., by the understanding), but then they can be merged in propositions which may be true or false (i.e., in judgements). The same is not the case for the objects of perception: they can be acquired in a manner which is not open to error (i.e., by the common sense), but they cannot be subsequently

complex systems through natural selection or whatever other natural process. Pasnau (2002, 172-80) argued in favour of this minimal teleological assumption in Aquinas's analysis of sensation. The interpretation of Aquinas's thesis on the correctness of sensation which I have proposed is corroborated by the fact that he restricted his claim to normal cases by adding two qualifications: the senses are infallible if and only if they function properly (*CDA*, III, 6, 67-70) and there is no external impediment to the reception of the form of the object (*ST*, I, 85, 6, c). Pasnau (2002, 189) claimed that, with these two qualifications in place, the infallibility of the senses thesis is trivial, although not viciously so. I think, on the contrary, that my interpretation shows that the thesis is not trivial: the claim that the senses are infallible is the claim that they take in external forms properly, and the two qualifications leave open the possibility that the senses may be activated even though they are not taking in any really externally existing form.

merged by any sensory faculty in ways which parallel the functioning of judgement in the intellect and its openness to error.

Aquinas's second reason for claiming that the common sense cannot comprehend, and therefore is different from the intellect, depends on the fact that (at least some) animals manifest the capacity to perceive, although they also seem to lack the cognitive capacities which are associated with understanding, i.e. which require the deployment of concepts:

The intellect as judging is said to have wisdom, whilst as apprehending it is said to understand. [...] Sensation belongs to all animals, but wisdom is found in only a few; therefore they differ. And [Aristotle] allows wise judgement to 'a few animals', and not exclusively to man, because even certain brute animals have a sort of prudence or wisdom, in that they instinctively form correct judgements on what they need to do.²⁴

Here, Aquinas defines two operations of the intellect (judgement and understanding), which - as he noted in many other places - require the possession of universals, i.e. the deployment of conceptual abilities. The argument also presupposes that perception (or "sensation", as Aquinas says) does not involve the deployment of conceptual abilities. If that is so, since most animals seem to perceive, but to lack wisdom, the common sense and the intellect must be two distinct faculties. Aquinas subsequently comments on a restriction put forward by Aristotle: some non-human animals are capable of some intellectual activity (wisdom), at least to a certain extent. For example, a zebra may start running at the sight of a lion and this entails that it recognised the lion as a danger of some sort. On the other hand, this seems to require "a sort of" conceptual and discriminatory ability.

²⁴ CDA, III, 4, 629: "Intellectus enim habet iudicare, et hoc dicitur sapere et apprehendere, et hoc dicitur intelligere [...]. Sentire inest omnibus animalibus; sapere autem non inest omnibus, sed paucis; ergo sapere non est idem quod sentire. Dicit autem quod sapere inest paucis animalium, et non quod insit solis hominibus, quia etiam quaedam animalia participant aliquid prudentiae et aliquid sapientiae, scilicet quod recte iudicant de agendis per aestimationem naturalem."

This restriction leads to a possible objection which is particularly interesting for our purposes, since a reply which is available to Aquinas will give us the chance to proceed in the explication of his theory of cognition. The problem arises from the fact that he seems to fail to distinguish between sensation and perception, the former being a mere awareness to the environment, the latter an awareness to the environment which brings about informed cognitive states about the environment itself. The point is that (probably) all animals which have sense organs react to the environment in manners which are best explained by granting them informed cognitive states about the environment, and this would amount to an attribution of conceptual capacities. In other words, all animals capable of perception have "a sort of prudence or wisdom."²⁵ Only few very simple beings could be said to have plain sensations, but certainly all complex organisms which may be thought to have a common sense, should be granted conceptually informed perceptions. If this is so, Aquinas fails to offer an example of a being which has a common sense, but lacks intellectual capacities, and, thus, fails to give the expected counterexample proving that the common sense and the intellect are not the same faculty.

Aquinas could reply to this objection by invoking a distinction which he drew elsewhere between animal and human perception. In the *Summa theologiae*,²⁶ he distinguished between two perceptual faculties, one belonging to non-human animals which lack conceptual capacities, and one belonging to humans, which have those capacities. Animals react to perceptual experiences in ways which are determined by their instinct, but which do not presuppose a conceptual understanding of the

²⁵ The view according to which perception is conceptually informed is argued for by McDowell (1994). The distinction between sensation and perception in terms close to those suggested above is due to Hamlyn (1996, 30 ff.). According to Hamlyn perception has to be distinguished from sensation although it may not require the mastering of concepts, since it still requires an active and selective role on the side of the perceiver. As we shall see, this possibility may be suggested in Aquinas's framework and vindicate the argument under discussion.

²⁶ *ST*, I, 78, 4.

contents of their experiences: they have a quasi-conceptual faculty, the *vis aestimativa* or estimative power, which makes them recognise relevant objects and act consequently, without them understanding what sorts of objects they are. For example, zebras react in certain ways when they receive phantasms of lions, although they may lack the concept *lion*. We can deny that they have the concept *lion*, since, besides reacting properly in front of lions, they do not seem capable to entertain thoughts about lions, nor can they develop more sophisticated behaviours in relation to lions than their instinct allows them. Humans, on the other hand, seem to have a different, deeper comprehension of their *phantasmata*, and Aquinas calls '*vis cogitativa*', or 'cogitative power', the relevant capacity. Humans, in fact, develop a conceptual understanding of the objects they perceive, by collecting together different instantiations of *phantasmata* which are identical under relevant respects, and which they met throughout their experiential individual history. The fact that they may develop concepts is exhibited by the fact that they can articulate complex thoughts about the kinds of object they have encountered, and may acquire novel attitudes toward them.²⁷ The result is the formation of a habit to link all objects of a certain sort to a certain collection of past experiences of objects of that sort. The relevant sort will be determined by similarities and partial formal identities found in numerically different *phantasmata*. This capacity, on the other hand, is precisely a conceptual ability. To form such a collection of numerically different but formally similar or partially identical *phantasmata* (*collectio intentionarum*) is to form a concept.

With this distinction in place, Aquinas could defend his argument. Indeed, although most animals with a sophisticated sensory apparatus may have perceptual

²⁷ The functioning of the cogitative power and the role of experience is analysed by Stromberg (1967 and 1968).

abilities – in addition to sensory ones –, their perceptual experiences are not conceptually structured since their *phantasmata* are interpreted by the estimative power, but not comprehended by the cogitative power. When they respond to the environment, therefore, they do have a "sort of wisdom", but this is only instinctual (as Aquinas explicitly says in the passage of *CDA* under discussion, when he mentions the estimative power) and lacks a real judgement based on conceptual capacities.

The introduction of the cogitative power leads us towards the final phases of the cognitive process, as described by Aquinas. The cogitative power can understand the nature of the phantasms received by the common sense in virtue of the fact that it is connected to higher cognitive faculties, i.e. the intellect. The intellect is the faculty capable of cognising the nature (*natura*) or essence (*essentia*) or intelligible species (*species intelligibilis*) of a thing, that is the collection of features which an object needs to have in order to be the sort of thing which it is. Essences are universal, since all things falling under a relevant sortal concept have the same essence. Essences, however, have actual existence only when they are grasped by a mind: each thing is structured by an individual instantiation of a certain form. The humanity of Peter, for example, is identical to the humanity of Paul, but they are different instantiations of the same form, viz. humanity. In order to understand that they both are humans, though, their common features need to be abstracted from individual differences, i.e. their formal identity – the universal – must be grasped by an intellect. Thus, the intellect is the capacity to grasp universals.²⁸

The intellect may think by receiving an intelligible species of a thing, which is the form of that thing abstracted from all individual features, i.e. from all features which make that thing an individual numerically different from other things falling

under the same sortal concept. As we have seen in chapter one, matter is the principle of individuation of material entities: thus, the intellect is an immaterial faculty, which – in Aquinas's word – means that it is a faculty which is not the act of any corporeal organ. (A discussion of the problem of the immateriality of the intellect was already carried out in chapter two above).

The intelligible species received by the intellect is a representation of the external thing. This claim, however, is not intended in the sense of saying that the species is itself an object of awareness which depicts the external thing:

The intention [viz. the species existing intentionally in the intellect] is not in us the thing thought of, for it is apparent that it is one thing to know things and another to know the thought intention itself which the intellect does when it reflects on its work.²⁹

Similarly, Aquinas wrote in the commentary on *De anima*:

The intelligible idea by which the potential intellect is actualised are not in themselves the intellect's objects; for they are not that which, but that by which it understands; [...] what the intellect understands is the essence existing in things; it is not its own intelligible idea, except in so far as the intellect reflects upon itself.³⁰

John Haldane argued that Aquinas supports a sort of 'representationalism', which, however, does not involve the awareness of internal representations, but the production of acts of mental representation.

The intellect is certainly productive, but the representations issuing from it are 'performances' the character of which in any given case is determined by the species that inform them. [...] If I perform a series of movements this may succeed in representing the display of a pheasant, say directly and without the event standing between thought and its reference. [...] I do not put myself into

²⁸ Cf. *ST*, I, 79, 1.

²⁹ *SCG*, IV, 11, 6: "intentio non sit in nobis res intellecta, inde apparet quod aliud est intelligere rem, et aliud est intelligere ipsam intentionem intellectam, quod intellectus facit dum super suum opus reflectitur."

³⁰ *CDA*, III, 8, 718. "species intelligibiles, quibus intellectus possibilis fit in actu, non sunt obiectum intellectus. Non enim se habent ad intellectum sicut quod intelligitur, sed sicut quo intelligit. [...] Quod intellectus intelligit est quidditas, quae est in rebus; non autem species intelligibilis, nisi inquantum intellectus in seipsum reflectitur."

an 'of-a-pheasant' state of mind by first thinking of the dance. It is not an object of thought, rather the movements embody my thinking.³¹

As Haldane himself remarks, the analogy between thinking and dancing hides some important difference, primarily the fact that thinking is intrinsically representational, whereas dancing needs to be interpreted. The important point highlighted by the analogy, however, is that a thought may be seen as an act of the intellect which is structured according to the structure of the thought object. An intelligible species, thus, turns out to be a habit of the intellect to act in certain ways so as to refer to the things which instantiate that species.

The relevant acts of the intellect involve both abstract inferential processes among propositions (e.g., propositions having the essences of the thought things as their semantic values) and a constant turning toward mental images (*conversio ad phantasmata*). Thus, although the intellect is immaterial, in embodied life (when no direct furnishing of thoughts from God is available), its exercise of conceptual capacities constantly requires the focus of attention on some phantasms, which, being the objects of the internal sense, are material entities.³² An intellect, therefore, has acquired a certain intelligible species when it has developed the habit to act according to certain inferential and representational patterns so as to refer to the objects of the relevant kind. The identity between the intellect and the object will be secured by the fact that there is an isomorphism between each received intelligible species (i.e., the habit to perform certain mental actions) and the features of the

³¹ Cf. Haldane 1989a, 25-26; similar points are also made in Haldane 1992b and Haldane 1993b.

³² Aquinas puts forward his thesis of the *conversio ad phantasmata* in *ST*, I, 84, 7. There is an interpretative issue concerning the modality of Aquinas's claim according to which turning to inner images would be necessary for the intellect in embodied life. Lonergan (1967) and Kretzmann (1993) argued for the view that the necessity is merely *post quem*, grounded on the empirical evidence that we (almost) always depict mental images while thinking. Pasnau (2002, 288-295), on the contrary, has convincingly argued in favour of the view that, according to Aquinas, the very nature of thought requires the functioning of inner pictorial abilities, when no thought is substantiated directly by God, like in angels or disembodied human souls.

external things of a certain kind which are relevant for the fact that they all belong to the same kind.

By acquiring the relevant habits, the intellect may become identical – in the sense specified – to all material objects accessible to the senses. Consequently, the intellect may be all things, as Aristotle contended. Since, at birth, children do not have (all) concepts which they will develop throughout their lives, it is clear that the intellect must form them along its history. Thus, at least one of its parts must be suited to receive the forms of all sorts of things to which we may have empirical access. Such faculty, which will have to be passive, must be formally identical to all empirical things, i.e. it needs to be all of them *potentially*. Aquinas calls it 'potential intellect' (*intellectus potentialis*), 'possible intellect' (*intellectus possibilis*) or 'passive intellect' (*intellectus passivus*).³³

At this point a further problem presents itself and leads Aquinas to introduce the final stage of the cognitive process. How can the intelligible species be acquired by the potential intellect? The question is problematic since the intelligible species are contained potentially in the *phantasmata*, and the potential intellect is potential. According to Aquinas, though, the potentiality of a thing may be actualised only if another part of that thing, or some other thing may act on it to actualise the potentiality. Since a thing can only act in virtue of its actuality (i.e., in virtue of having certain powers due to the structure received by its matter through its form) neither the *phantasmata* nor the passive intellect may be responsible for the actualisation of the passive intellect by some intelligible species. Consequently, Aquinas must introduce a further power of the intellect which makes "things actually

³³ ST, I, 79, 2, c and ad 2.

intelligible, by abstraction of the species from material conditions"³⁴ (i.e., from the *phantasmata*). This is the 'active intellect' (or 'agent intellect'), which, being constantly in act, can abstract the intelligible species potentially present in the *phantasmata*, by stripping them from their material conditions, and can subsequently "store" them in the passive intellect.

It is clear that sensation is a necessary step of the cognitive process: were the *phantasmata* unavailable, the intellect could not actualise the intelligible species, and the potential intellect could never receive any actuality:

The sensible powers are necessary for the soul to understand, not only accidentally by stimulating them, as Plato had claimed, not even merely to give it a disposition, as Avicenna thought, but in order to represent its own object to the intellect.³⁵

In conclusion, the passive intellect may contain the intelligible species, whereas the active intellect can make them actually intelligible. This is why Aquinas metaphorically compares the active intellect to a light: as light makes objects visible, so the active intellect makes species intelligible.³⁶ Anthony Kenny offered one of the best available explanations of this metaphor for contemporary readers:

What can we say about the agent intellect apart from this metaphorical description? First of all, it is an ability, or capacity, belonging to individual thinkers. For Aquinas, it is a natural endowment which each human being has; it is not – as it was for some other medieval Aristotelians – a supernatural agent acting on human beings from outside in some mysterious way. The agent intellect is the power which humans, unlike other animals, have of acquiring abstract information from sense experience. Animals with senses like ours perceive the same material objects we do, but they lack the ability to talk about them, to acquire scientific knowledge about them. The species-specific ability which they lack is the agent intellect.³⁷

³⁴ *ST*, I, 79, 3, c: "quae faceret intelligibilia in actu, per abstractionem specierum a conditionibus materialibus."

³⁵ *QDA*, 15, c: "potentiae sensitivae sunt necessariae animae ad intelligendum, non per accidens tamquam excitantes, ut Plato posuit; neque disponentes tantum, sicut posuit Avicenna; sed ut repraesentantes animae intellectivae proprium obiectum."

³⁶ *ST*, I, 79, 3, ad 2.

³⁷ Kenny (1993, 47).

Kenny notes an analogy between Aquinas's introduction of the active intellect and Chomsky's claim that humans have a species-specific innate language-learning ability: the best way to explain why humans can learn languages as quickly as they do is to postulate that they have such an ability to acquire the fundamental structure of all languages. Even though Chomsky's ability concerns syntax and grammar, whereas Aquinas's concerns semantics, the agent intellect may be understood as an ability of that kind, i.e. the capacity to think.

These are the general lines of Aquinas's views on cognition. What is important for our purposes is to see how the notion of formal causation analysed in chapter four can warrant the identity between mind and world which is the main epistemic merit of the Thomistic conception of knowledge. In the next section, we will consider the role of formal causation in sensation; and in the section following that, we will consider the role of formal causation in thought.

5.2 Perception and Formal Causation

As we have seen, perception consists in the senses taking on the forms of external objects. This is a material reception, since the sense organs are material entities, and the forms existing in them structure matter in a certain manner. In the previous section, we have also seen that the form existing in the organ does not exist in the same manner in which it exists in the external object. In order to explain the role of formal causation in perception, we need to pause a bit longer on this aspect. While commenting on Aristotle's analogy between the senses receiving the forms of things and wax receiving the print of a ring, Aquinas wrote:

Form received in a patient from an agent sometimes has the same mode of existence in the recipient as in the agent; which occurs when the patient is disposed to the form in the same way as the agent. [...] And it is in this way that air receives the influence of fire, and any other passive thing in Nature the action which alters its natural quality. Sometimes, however, the recipient receives the form into a mode of existence other than that which the form has in the agent; when, that is, the recipient's material disposition to receive form does not resemble the material disposition in the agent. In this cases, the form is taken into the recipient "without matter", the recipient being assimilated to the agent in respect of form and not in respect of matter. And it is thus that a form without matter, the form having in the sense, a different mode of being from that which it has in the object sensed. In the latter it has a material mode of being, but in the sense a cognitional and spiritual mode.³⁸

The same form, therefore, may be received by different patients in different ways. Objects have accidental and essential qualities in virtue of having certain forms, accidental and essential, respectively. When something acts on something else in virtue of a certain form, i.e. in virtue of a power or actuality of its, the patient is modified in a certain way. Such a modification is the reception of a new actuality by the patient, i.e. the reception of a new form giving it a novel structure. Since the features and the structure acquired by the patient as a result of the action depend on the features and the structure of the agent, the relevant structure of the agent and the structure resulting in the patient are isomorphic, at least to some extent, and so an at least partial formal identity between the patient and the agent is induced. The reception of the form by the patient, however, may or may not cause the patient to acquire the same quality that the agent has in virtue of having the actuality which gave it the power to act as it did. If such an identity of qualities occurs, the received

³⁸ *CDA*, II, 24, 552-3: "Nam forma, quae in patiente recipitur ab agente, quandoque quidem habet eundem modum essendi in patiente, quem habet in agente: et hoc quidem contingit, quando patiens habet eandem dispositionem ad formam, quam habet agens [...]. Et hoc modo aer patitur ab igne, et quicquid patitur passione naturali. Quandoque vero forma recipitur in patiente secundum alium modum essendi, quam sit in agente; quia dispositio materialis patientis ad recipiendum, non est similis dispositioni materiali, quae est in agente. Et ideo forma recipitur in patiente sine materia, in quantum patiens assimilatur agenti secundum formam, et non secundum materiam. Et per hunc modum, sensus recipit formam sine materia, quia alterius modi esse habet forma in sensu, et in re sensibili. Nam in re sensibili habet esse naturale, in sensu autem habet esse intentionale et spirituale". Cf. a parallel passage in *ST*, I, 78, 3, c.

form structures the agent and the patient in the same way and, thus, it exists “naturally” in the patient, i.e. in the same way in which it existed in the agent. Otherwise, it has a different kind of existence in the patient, i.e. spiritual or intentional (“cognitive”) existence. Let us consider Aquinas’s own example: air. When a fire heats the surrounding air, a form of the fire (i.e., the particular structuring of matter in virtue of which the fire is hot) gives it the power to act on air in a certain way and, thus, air acquires a new structure, isomorphic to that of the fire: the form of heat. Air thus receives a form of fire. As a result, air gets hot. The newly received form, consequently, exists naturally in air: by having it, air comes to have the same quality which fire has in virtue of that form, viz. the quality of being hot.

A form is received “intentionally” or “spiritually”, Aquinas says, when, in respect of that form, the recipient has a material disposition different from that of the agent. This seems to be Aquinas’s interpretation of Aristotle’s claim according to which forms are received by the senses without matter. Let us note that Aquinas’s interpretation does not purports that the reception does not involve matter: all it amounts to is the idea that the agent and the patient have a *different* material disposition towards that form, namely that in virtue of having a different hylomorphic structure the patient does not take on a certain quality of the agent by taking on the form in virtue of which the agent has that quality. Still, the reception of the relevant form in the sense causes a new structure in the matter of the sense. Since the new structure which the sense comes to have is isomorphic to the structure of the agent which determined it, it makes sense to say that there is an (at least partial) identity between agent and patient, although that identity does not manifest itself like a qualitative similitude.

It must be considered, however, that the fact that the reception of forms by the senses are material events, does not entail that they are wholly physical processes, which could be accepted by a modern physicalist, contrary to what Pasnau claimed (1997, 36). Elsewhere, I have already offered various reasons to reject Pasnau's interpretation (De Anna 2000b, 53-58). We do not need to rehearse them here, but it may be worth recalling the main point: Aquinas's immaterial reception of forms is a material process, but presupposes a metaphysical outlook in which materiality comes in degrees³⁹ and assumes the conception of the soul as a substantial form considered in chapter two. It is only within that framework that one can make sense of the material reception of forms being a step of a cognitive process, and not merely a physical change: according to Aquinas, the soul is both the form of the body and an immaterial entity capable of thought, an activity independent from matter. It is in virtue of this fact that a material change occurring in the senses may become the object of conscious awareness and, subsequently, the content of propositional attitudes, i.e. that it may be available to higher cognitive capacities. Indeed, the soul is the substantial form of the whole body, and, *ipso facto*, it structures the sense organs. Any alteration of a sense organ, consequently, is an alteration of the soul, a change of structure of the form which structures that sense organ.⁴⁰ As a partly immaterial being, the soul may be aware of that alteration and utilise the form received thereby for its higher cognitive activities.

Examples of forms received intentionally are all proper *per se* sensible objects:⁴¹ colours, odours, flavours, tactual qualities (warmth, roughness, etc.),

³⁹ My points in De Anna 2000b largely depend on Paul Hoffman's interpretation of Aquinas's metaphysics as purporting a hierarchy of forms depending on the different degrees in which different forms may be distant from prime matter (cf. Hoffman 1990).

⁴⁰ Cf. CDA, II, lecture 24, par. 555.

⁴¹ This is not inconsistent with the claim – made in section 5.1 above – that only accidental objects of perception (substances) may have intentional existence. In De Anna 2000b I contended that the forms of *per se* objects of perception can be analogically said to exist intentionally by Aquinas (both in the

sounds. These are forms structuring external objects which impinge on the senses and are received by the soul. The senses are acted upon by the external objects in manners determined by the structures of those objects and are structured isomorphically, so that a partial structural identity results between objects and senses. What now needs to be explained is how this process could be accounted for in terms of formal causation. As we have seen in section 4.2, causal *relata* are primarily events, but events are individuated by the substances which are involved in them, and those substances are in turn metaphysically constituted of their hylomorphic components, as discussed in chapter one. In section 4.2, we also saw that Mackie's *INUS*-conditional account of causation was implemented by Kim in order to offer an acceptable account of events. In the same section, I have suggested that Kim's proposal can fit in a Thomistic metaphysical outlook, if we develop the conditions for the individuation of events put forward by him through the specification of the hylomorphic components of the objects involved.

Let us recall that, according to Kim's proposal, ' $[x, A, t_1]$ caused $[y, P, t]$ ' means also - or at least -, that $[x, A, t_1]$ is an *INUS* condition of $[y, P, t]$, which is the case if and only if:

- (i) $A(x, t_1), P(y, t)$
- (ii) A is an *INUS* property of P ;
- (iii) Some set s_i in S_{AP} containing A and at least one other property is realised on the occasion of $[x, A, t_1]$;
- (iv) S_{AP} contains at least one set other than s_i .
- (v) No set of properties in S_{AP} other than s_i is realised on the occasion of $[y, P, t]$.

senses and in the media), in virtue of their role in the cognitive process, i.e. in the process leading to the full and proper intentional existence of things in perception and understanding.

(we do not need to reconsider all the complications involved in the fact that an at least *INUS* condition could do). Here, S_{AP} is the set of sets of events s_i which are minimal sufficient for the occurrence of the effect-event.

In section 4.2, considerations concerning hylomorphism led me to the conclusion that, within a Thomistic metaphysical outlook, it may be claimed that each set of events s_i must contain, among other event, also (at least the first three of) the events dictated by the four *strict causal conditions*. The second condition, however, is that which most concerns us at this point, since it is that which explains formal causation, as argued in the previous chapter. Thus, an event $[y_{mf}, a(f^n), P, e, t]$ may occur only if the *formal INUS condition*, which is one of the four *strict causal conditions*, occurs. In other words, only if:

- 2) there is an instantiation of the form f^n – an accidental form of some substance s – which, at a time t^i antecedent to t^f , exemplifies the relational property S of being disposed to jointly structure the members of the set M , as characterised in condition 3 (i.e., *material INUS condition*, cf. Section 4.2), so that they jointly receive the actuality a ; i.e., a polyedie event of the form $[s_f, S_{(f, M, a)}, e^i, t^i]$ takes place.

In the case of sensation, the effect-event $[y_{mf}, a(f^n), P, e, t]$ is an event of sensation, which involves the sense organ y_{mf} (for example an eye) and its actualisation a by the sensible form f^n (for example an exemplification of red on the surface of an apple) at time t . The sense organ y_{mf} (the living eye) is hylomorphically constituted, in particular m is its matter (the actual eye) and f is its form, namely the soul of the person to whom it belongs. The end e may be the role of sensation in the cognitive process. It is disputable that sensations may be said to have purposes, but for what it matters to us we could even accept that they don't (in that case the effect-

event would take the form $[y_{mf}, a(f'), P, e, t]$. However, since we are dealing with a Thomistic proposal we may accept that sensation is teleologically oriented, as Aquinas suggested.⁴² P is the property which the sense organ exemplifies when it is actualised by f' , namely the sensory awareness of the form f' (red in the example).

Concerning the formal cause-event, f' is the sensible form in virtue of which the object (the apple) has the relevant quality (the colour red), which is received "spiritually" by the medium (air). The medium (air), thus, is the substance s which contains f'' accidentally and intentionally, and, in virtue of this, has the power to structure the sense organ (the eye). Indeed, when f' is contained intentionally and accidentally in the medium, it exemplifies the relational property S of being disposed to jointly structure the members of set M (the set of substances which are jointly disposed to be structured by the form f') by actualising through the act a a disposition that they jointly possess. The set M contains an only member, the sense organ y_{mf} (the eye), which receives f' .

At this point, we need to face an exegetical problem pointed out by Kenny (1993, 35-6). The topic is interesting since it also raises philosophical issues: it concerns the act a , which is the reception of the form by the sense organ. As we have seen, the actualisation a of the sense organ is due to the reception of the form f' , which is the very form of the external object. This seems to imply that the sensible object (i.e., the form, for example the colour red) exists independently of the reception of it by the sense organ. The property, in other words, exists independently of being perceived. At some point, however, Aquinas claims that "the sensible object in act and the sense in act are one thing."⁴³

⁴² Cf. *ST*, I, 77, 3. Aquinas's views on the teleology of sensation are discussed and defended by Pasnau (2002, 172-80).

⁴³ *CDA*, II, 9, 5: "sensible in actu et sensus in actu sunt unum."

Aquinas's idea of the reception of forms may seem to conflict with his thesis that the act of the sense and the act of the sensible object are one and the same reality. If the second claim is taken seriously, the external forms should be considered as mere dispositions to look in certain ways when perceived, but they could not be taken to exist externally in the same way in which they exist in perception. This conclusion, however, conflicts with the general point that the senses take on the forms of external things as they are in reality. This entails that Aquinas would end up assuming a distinction similar to Galileo's and Locke's primary-secondary qualities distinction, which jeopardises his attempt to ground a theory of cognition according to which we are not acquainted with ideas or representations, but with the external world.

Elsewhere,⁴⁴ I have argued that this worry can be avoided if one interprets Aquinas's claim according to which the act of the sense and that of the sensible object are one without assuming post-lockean worries. In Aquinas's terminology, indeed, to claim that the act of the sense and the act of the object are one, amounts to claiming that the sensible object is sensed when some sense senses it, which is, of course, a truism. A strong reason in support of this interpretation may be the fact Aquinas distinguished first actualities (and potentialities) from second actualities (and potentialities).⁴⁵ Let us recall that a first actuality is a structure or organisation that a thing has in virtue of having a certain (either accidental or substantial) form, which confers some power upon it. That thing may or may not then exert that power. A second actuality is the act of exertion of a power which a thing has in virtue of some first actuality. Thus, for example, a colour is a first actuality, since an object which has it has the power to act on eyes. The actual acting on eyes, though, is a

⁴⁴ De Anna 2001, 272-80.

second actuality. Similarly, the eyes of a living person have a first actuality, which is the life of the soul structuring the person to whom they belong. Their capacity to see, though, is only potential, unless they receive a second actuality through the action of some sensible forms on them. Aquinas himself writes that:

Sense-faculty and sense-object can be taken in two ways, as in potency and as in act. From the point of view of act, what [Aristotle's predecessors] said was correct: there is no sense object without sensation. But it is not true from the point of view of potency.⁴⁵

Coherently with this interpretation of Aquinas, the account of formal causation proposed above takes the act a to be a second actuality of both the sensible object and the sense organ. It is an actuality of the sensible object since by realising a the sensible object comes to exemplify the property $S(f', M, a)$, which is precisely the property of being sensed by $y_{mf} \in M$. Furthermore, by being a -actualised by f' , y_{mf} is involved in the event $[y_{mf}, a(f'), P, e, t]$ in which the perceptual property P is realised, i.e. the colour red is perceived by y_{mf} . This is the second actuality of the sense faculty.

Someone could still insist that no matter what Aquinas says about first and second actualities, the appearance of f' in the perceiver is the perceptual property P , which only exists in the soul of the perceiver, not in the external object. This, the objector could claim, suggests that Aquinas must be committed to the distinction between primary and secondary properties. To the contrary, I believe that Aquinas can coherently maintain that the sensible *per se* object is the form f' , which is sensed by the subject through an instantiation of the perceptual property P , but he does not need to accept the thesis (entailed by the primary-secondary qualities distinction) that

⁴⁵ Cf. section 1.5 above. The distinction occurs at many places, but see, for example, *SCG*, II, 9, 3. An extensive discussion of this distinction is carried out in Lonergan 1967, 106-51.

⁴⁶ *CDA*, III, 2, 596: "de sensu et sensibili secundum actum accidit quod ipsi dicebant, quod non est sensibile sine sensu. Non autem hoc verum est de sensu et sensibili secundum potentiam."

P is caused by a disposition or a power which the external object has in virtue of having some properties (or dispositions grounded on properties) which are not tracked by *P*-experiences. In other words, it is coherent to maintain both the view that a colour looks the way it does only when it is looked at, and the view that a colour is a categorical property of an external thing, not a disposition or power which the thing has in virtue of having other categorical properties. I take it that this is precisely the sense of the claim that the act of the sense *per se* object and the act of the sense organ are one and the same.⁴⁷

A further issue concerns the status of the perceptual states which exemplify perceptual properties, like *P*. In the above discussion it was assumed that they are states with a phenomenal character, but also that they are material, in the sense that they are states of sense organs. States of this sort may seem problematic, since they are physically realised *qualia*. John Haldane has argued in favour of the possibility of them with the suggestion that the metaphysical status of *qualia* is troublesome only within a Cartesian picture of the mind as phenomenological in essence, a picture which is commonly endorsed also by contemporary materialists. Against such a view, one may advance a range of alternatives, within which one may

remain agnostic about the possibility of a naturalistic account of *qualia* and still see merit in an old suggestion of Putnam's that the 'qualitative character' of a sensation, say, is just the physical realisation of a state that has the function of signalling the presence of some feature in the body or in the surrounding environment.⁴⁸

The problem with the Cartesian picture would be that it induces one to think of a state of awareness as a state of an immaterial substance. If one denies the possibility of immaterial substances (as most contemporary philosophers do), but

⁴⁷ I believe that this supports the coherence of Aquinas's views on the matter, which is enough for my present purposes. In De Anna 2002 also argue in favour of their philosophical plausibility.

⁴⁸ Haldane 1998, 270. The reference is to Putnam 1981, Ch. 4.

maintains this presumption, one is obliged to deny the possibility of states of awareness altogether. A Dual Aspect-theorist or a Neutral Monist, on the other hand, can accept that physical states may exemplify properties of which the bearers are aware.⁴⁹ In particular, a Dual Aspect-theorist may hold that humans are constituted of one kind of substances only, but that they may have both physical and mental aspects, that is they may exemplify both physical and non-physical properties. A Neutral Monist, on the other hand, may even deny that there are two kinds of properties, and nonetheless maintain that the particular kind of substances which constitute human beings can be described both in physicalist and in mentalistic terms. The upshot of these metaphysical frameworks, however, is that the mind is not the domain marked by awareness: there is no one independent entity in which all states of awareness inhere.

Aquinas's conception of the soul seems to be consistent with a view of this sort. According to him, the whole living body is pervaded by the soul, which is the form of the whole body, including each organ and each part. Most of the faculties of the soul, although not all of them, involve a part of the body undergoing material changes. Awareness may be a property which some of these material changes exemplify, and perception may be an example of this. As already mentioned above, there are reasons to resist a bold physicalism: the kind of Dual Aspect or Neutral Monist theory required by Aquinas must be of a kind which allows for the possibility that the awareness exemplified by a corporeal state or event can be "felt" by the soul, which is an ultimately immaterial entity, for the reasons already considered in chapter 2 and in section 5.1. What matters for our purposes, however, is that the fact that a phenomenal property *P* may be exemplified by a material event occurring in a

⁴⁹ A view of this sort in contemporary debates is supported, for example, by John Heil (cf. 1998, Ch. 6: "Minds and their Place in Nature").

sense organ does not constitute a problem. A perceptual property P is the phenomenal aspect of an event occurring in a material body (the sense organ) when it is stimulated by things in the environment, and, thus, it is the manner in which the environment manifests itself to the perceiver.

This characterisation of the phenomenal property P allows us to say something more about a sensible object being that through which (*quo*) perception happens, rather than the object (*quod*) of perception, as promised in section 5.1. P , in fact, is not an object of awareness, but is a property manifested by the receiver when he/she receives a form. It is not what the subject is aware of, but it is the way in which the received form f' manifests itself to her or him. In other words, it is the way in which the form of the external object appears to the perceiver. The upshot is that the form f' of the external object is directly manifested to the perceiver. This explains the sense of Haldane's claim according to which P "is just the physical realisation of a state that has the function of signalling the presence of some feature in the body or in the surrounding environment."

A further point about the role of formal causation in perception which needs to be dealt with concerns common sense. As we have seen in section 5.1, common sense unifies the sensible objects received by different sense modalities (e.g., colours, sounds, tastes, etc.; but also, shapes, sizes, etc.) and is consequently aware of *phantasmata*, which are the sensible forms of external things, viz. the forms of the accidental objects of perception (i.e., everyday three dimensional objects). I propose that these should not be intended as mental images, coherently with the dictum that they are the means, not the objects of perception. Rather, they could be understood as simultaneous co-ordinated states of awareness of several sense modalities activated at once. They are the awareness of the simultaneous reception of several sense *per se*

objects. Thus, the common sense receives an actuality when it is structured by a form fa , which is a function of the simultaneous reception of several form $f1, f2, \dots, fn$, by several external senses. In other words, $fa=F(f1, f2, \dots, fn)$, where fa is a phantasm, and F is a functional operator the exact meaning of which depends on the unifying operations actually carried out by the external sense. Whether such operations depend transcendently on an innate structure of the common sense or are structured by reality itself through the development of individual cognitive capacities is a matter of considerable debate among interpreters of Aquinas.⁵⁰ Either way, however, the following account of formal causation is available.

Let $[y_{mf}, a(f'), P, e, t]$ be an the event of the common sense y_{mf} being a -actualised by the form f' (which is the sensible form of an external accidental object), so that it exemplifies the perceptual property P (which is the awareness of the form f'). The perceptual property is open to the same consideration already discussed for the external senses. The formal INUS condition will be the event $[s_f', S(f', M, a), e', t']$, where s_f' is the living body with some sense modalities activated by the forms $\langle f1, f2, \dots, fn \rangle$, $f'=F(f1, f2, \dots, fn)$, M contains the only member y_{mf} , S is the property of being disposed to a -activate y_{mf} exemplified by f' at t , and e' is subject to the considerations about teleology already discussed in the case of the external senses.

The identity between f' and the form of the external accidental object of perception (viz. the perceived external three-dimensional object) depends on the suitability of function F . Let us illustrate this point with an example. I touch a smooth red apple. What I perceive is not a disconnected cluster of properties, but an individual with several qualities: redness, smoothness, a spherical shape and so on. I take in different qualities of the apple through different sense modalities: I see the

⁵⁰ The transcendental view was supported by Lonergan (1967), the developmental one by Fabro (1962, 288 ff., esp. 294). This point will be discussed more below.

shape and the colour, I feel the shape and the smoothness. The common sense unifies the information coming in through different senses and constitutes the individual which I actually perceived, i.e. it is aware of the phantasm of the apple. The unity I perceive, though, is formally identical to the actual apple only if my common sense has unified the data of different senses precisely in the same manner in which they are conjoined in reality. In other words, only if the function F can properly recompose the sensible forms of things which were 'shattered' by the external senses.

As mentioned above, the warrant of the suitability of function F may come either from transcendental considerations⁵¹ or from the idea that suitable functions akin to F were selected throughout the development of individual cognitive capacities or the evolution of the species. Indeed, having reliable functions akin to F is a fitting factor. Although the second option seems easier to support without appealing to demanding metaphysical assumptions, either way it may be concluded that the account of formal causation suggested in chapter two can explain how the sensible form of an external individual may be received by a perceiver by making her cognitive apparatus identical to it, through the actions of some of its accidental forms on her sense organs.

5.3 Hylomorphism and Isomorphic Thoughts

The form f' received by the common sense is a material form, viz. a form structuring, although "intentionally", a corporeal organ. As we have seen in chapter four, this makes it an individual form. It is in virtue of being an individual form, as

we have seen in chapter two, that it may be spatio-temporally located and can thus track the particular which impinged it on the senses. At the end of section 5.1, we saw that the individual form can structure the intellect and make it formally identical to external reality: the intellect groups that form with other formally identical forms received at different times, and thus acquires a habit to act according to its structure. We now need to see how formal causation is relevant in this process and, consequently, how the isomorphism between mind and world can be obtained.

Before dealing with the role of formal causation in thought, however, it may be worthy to recapitulate the modes of existence of a form, which were espoused in section 4.3 and 5.1. I believe that what was said above can fit neatly in a six-fold distinction among kinds of entities and relations suggested by Haldane (1998, 268):⁵²

- 1) *F-ness* – the universal, or form;
- 2) *The f-ness of X* – singular case or instance;
- 3) *X* – a particular subject;
- 4) *X exemplifies F-ness*, or a natural *exemplification* of F-ness;
- 5) *X exemplifies F-ness intentionally*, or is an intentional *exemplification* of F-ness;
- 6) *The f-ness of X is a natural case or instance F-ness*.

Cases 1-3 concern entities. Cases 4-6 concern relations, in particular two cases of exemplification (4 and 5) a case of instantiation. The F-ness referred to in 1 is an immaterial entity which can only have actual existence in a mind after abstraction, but exists potentially in its exemplifications and instantiations. The f-ness of X referred to in 2 is the principle of organisation which structures a particular

⁵¹ These will have to rely on a teleological outlook which may explain why the common sense is suited to cognise reality. Ultimately, one probably needs to call in question God's good will as a warrant that our cognitive powers are suited to cognise the world.

⁵² This is a more refined version of the seven-fold distinction presented in Haldane 1997b.

individual, X , i.e. it is an individual form. 2 and 5 differ for the fact that the f -ness of an individual may be considered both as an entity and as instance of the universal F .

In section 4.3, we have introduced the notion of formal identity among individual forms. Let us recall that two individuals a and b are formally identical if they are structured by two isomorphic principles of organisation, e.g. the forms fa and fb . We can introduce the formal identity operator " $=_F$ " which means that, if $g=_F h$, g and h are the same form as the universal form F , and each of them may be an instantiation of F , an exemplification of F , or F itself. Thus, $fa=_F fb$, $fa=_F fa$, $fa=_F F$, and $F=_F F$ are all well formed formulas.

We can now try to account for the role of formal causation in intellectual cognition, which was expounded in section 5.1. As we have seen, intellection involves the active intellect abstracting the intelligible species from phantasms, and actualising the potential intellect accordingly. Thus, if $[y, a(f'), F, e, t]$ is the event of the potential (immaterial) intellect y exemplifying the property F (i.e., the capacity to entertain F -ly structured thoughts, which, as we saw in section 5.1, involve both semantically determined inferential dispositions and imaginative dispositions), by being a -actualised by the form f' , both the following *efficient INUS* condition and the following *formal INUS* condition must occur in any set minimal sufficient for the effect:

- *Efficient INUS condition*: the active intellect x_f , which, by having the act a^i ($=a$) through a form f^i ($=f'$), at a time t^i antecedent to t , exemplifies the relational property A of actualising the immaterial potentialities of the potential intellect y , through the form f' which may be a substantial or accidental form of some substance s and satisfies the *formal INUS* condition; in other words, a polyedic event of the form $[x_f, a^i(f'), y, s_f, A_{(xf)}$,

$ai(f), y, f), e^t, t^t])$ takes place. (Again, for present purposes, we may just assume that cognition has an end).

- *Formal INUS condition*: there is an instantiation of the form f' - which may be a substantial or accidental form of some substance s - which, at a time t' antecedent to t^t , exemplifies the relational property S of being disposed to structure the potentialities of the intellect y , so that it receives the actuality a ; i.e., a polyedic event of the form $[s_f, S_{(f, y, a)}, e^t, t^t]$ takes place. (The usual considerations on teleology apply).

This account of the mind-world relation clarifies some issues concerning mental representation. As mentioned in section 4.3, formal identity may be a matter of degree, since different degrees of isomorphism may hold among different things. This may account for two important features of thought. First of all, degrees of isomorphism may account for the fact that concepts are hierarchically structured. A man falls under the concept *man* and a dog under the concept *dog*, but both fall under the concept *animal*. This may be explained by the fact that the form of animality is isomorphic both to that of caninity and that humanity, but the latter two have a greater isomorphism with actual dogs and men respectively, than the former does. Second, degrees in isomorphism may explain why, according to Aquinas, the intellect cannot go wrong in grasping concepts, as mentioned in section 2.2 above. Indeed, it may be claimed that whenever there is a thought, some grouping of objects according to structural isomorphisms must have occurred. Counter-examples to the claim that all these count as proper concept-formation may be explained with the idea that they still require some degree of isomorphism, although only proper concepts involve the highest degree of isomorphism. Let us imagine that I wrongly take the concept *bike* to be exemplified both by bicycles and by skateboards. In

order to think about all those objects in the way I do, I still need to have selected some isomorphism among them, but I do not really have the concept *bike* since I have not noted that among some of them (proper bikes) there is a higher isomorphism than among the set including also the rest (skateboards). Until I do not recognise that, I do not have the concept bike, but I do not have it wrongly: I do have some other concept (e.g., wheeled non-powered mobile device). In other words, I do not have a wrong concept.

It may be concluded that the Thomistic theory of causation developed in chapters three and four offers an analysis of the notion of formal causation which may account for the idea that the cognitive process involves the world as a formal cause of thoughts. As we saw in chapter one, the world is constituted of hylomorphically constituted substances, which may act on the senses and pass on their forms to them. As a result, sensory events instantiate properties which are isomorphic to the forms of sense objects, since the forms of external objects are constituents of the formal *INUS* conditions of effect events. The data of different senses are merged together by the internal sense. The forms structuring sensory events are isomorphic to the content of the common sense to which they give rise, and thus *phantasmata* (the forms received by the common sense) are formally identical to external objects. Again, the forms of the senses are causes of phantasms since they constitute the formal *INUS* conditions of perceptual events. Finally, the phantasms (i.e., sensible forms of external things) are constituents of the formal *INUS* conditions of the events of actualisation of the intellect: as such they are formal causes of thought. Thus, the forms of external things are formal causes of thought. Consequently, external objects and thoughts concerning them are formally identical.

Conclusion

The aim of this work was that of developing a Thomistic theory of causation, suitable to account for the role of formal causation in the theory of mental representation proposed as a contender in contemporary debates by John Haldane and other supporters of Thomistic views within the analytic tradition. This task involved two main levels of work: on the one hand, it required the historiographical reconstruction of Aquinas's views on causation and the underlying metaphysics; on the other, it required the development of Aquinas's views on causation in a way which could make them a respectable party in current discussions. As a consequence, the first part of the work, notably chapters one and two, were more exegetical, and were centred on Aquinas actual claims, whereas the last part, chapters three to five, were Thomistic only in a broad sense, i.e. in the sense that they were elaborations of Aquinas's views beyond what he actually wrote, and were aimed at meeting the demands and challenges presented by analytical philosophy.

The more exegetical parts concerned metaphysics and cognition, whereas the most theoretical parts concerned causation. This cannot come as a surprise, since metaphysics and cognition were quite developed areas of philosophy in Aquinas's time and received a proportionally extended treatment by him. On the other hand, in the 13th Century, causation had not received attention comparable to that paid to it today. It is natural, therefore, that Aquinas has much more to say on metaphysics and cognition than on causation. Hence, in his texts one can find arguments closely related to metaphysical and cognitive issues discussed at the present, while one needs to speculate quite a lot to see how the few things he said about causation could

address worries on that topic which philosophers became aware of well after his death. The proposed theory of causation, nonetheless, is Thomistic, in that it attempts to justify all of Aquinas's claims on the matter, and, for aspects which cannot be found in Aquinas, it draws upon assumptions taken from his metaphysics.

Aquinas's metaphysics, at least as far as concerns aspects relevant to our purposes, proved to be more tenable and plausible than it might have seemed at a first sight. In chapter one, his views on substance priority were discussed. The priority of substances is the central thesis of Aristotelian descriptive metaphysics, which claims the world to be ultimately made of substances. Supporters of views of this kind, from Aristotle to Wiggins, had to struggle to find sound arguments for substance priority, and most attempts remained unsatisfying. However, the arguments for substance priority to be found in Aquinas's commentary on Aristotle's *Metaphysics*, which were discussed in chapter one, seem to offer a strong case for the Aristotelian view. The same can be said of Aquinas's views on form and matter. If prime matter is interpreted as a purely metaphysical item (i.e., as the potentiality for the realisation of substances which has to be introduced in order to account for substantial change) and it is not taken as a sort of stuff which is the ultimate physical constituent of reality, then it proves to be an acceptable principle. Similarly, the notion of substantial form (as opposed to that of accidental form) proved to be philosophically sustainable: the twofold criterion for substantiality proposed in chapter one, indeed, seems to account for most of our intuitions on how things are generated and corrupted, and for the difference between things which are made of other things (and thus fall under sortal concepts in virtue of accidental forms), and things the constituents of which are not actual things, but only potential (and thus fall under sortal concepts in virtue of a substantial form). The resulting picture of reality seems to

accommodate our intuitions about what we have common experience of, but it also seems compatible – at least in principle – with the results of science. As we have seen while discussing the objections to descriptive metaphysics presented by Simons, a substance-based descriptive metaphysics such as Aquinas's is in no worse position than contemporary alternatives in respect to the objects of science.

Another aspect of Aquinas's metaphysics which is relevant for his theory of mental representation concerns his conception of the mind. Chapter two focused on this issue and, in this respect, Aquinas's views appeared reasonable. Given the descriptive approach to metaphysics and the account of change discussed in chapter one, reality can be claimed to contain living things, and life to involve various kinds of capacities the exercises of which require actions which can be attributed to the substance which manifests them: a thing is alive if and only if the origin of its own vital "motions" (i.e., changes of states) is within itself. We saw that cognitive capacities can be counted among vital activities, and thinking represents the highest kind of cognitive capacity. On the other hand, thinking involves the reception of intelligible forms, and intelligible forms are universal. Hence, thinking must be an immaterial faculty (i.e., a faculty independent of any corporeal organ), since universals cannot be in matter, which is the principle of individuation. I have argued that, contrary to some objections by Robert Pasnau, this is a coherent view, given the metaphysical premise on individuation considered in chapter one. Aquinas is thus led to the conclusion that in nature there are immaterial substances, i.e. human souls. This is not an anti- or super-natural view, since this conclusion is arrived to through an analysis of change in material reality and an account of the capacities of material substances. Equally, however, it is not a naturalistic view in the modern, physicalist sense. The upshot is that cognition, the relationship between world and mind, cannot

be a naturalistic process in that modern sense either. The subsequent account of formal causation and mental representation needed to accommodate this metaphysical premise.

Concerning causation, Aquinas inherited from Aristotle the distinction of four species of causes (formal, material, final, and efficient), and various other distinctions about the proximity of causes, about causal chains, and about causal combinations. He went beyond Aristotle, however, and suggested that causal relations could be analysed conditionally: a causal relation is a relation in which the effect would not have occurred if the cause had not occurred. In the past few decades, analytical philosophers have done much work to develop a satisfy analysis of this sort. Although, for reasons mentioned above, a sophistication comparable to contemporary analyses cannot be expected from Aquinas, his views on causation must meet the requirements that have emerged from contemporary discussions, if they are to be advanced in current debates. The main concern of chapter three was to show that Aquinas's views can meet those requirements. The counterfactual analysis, which is a favourite development of the conditional analysis, was ruled out since it seems to face some fatal problems of its own and is grounded on metaphysical assumptions which are incompatible with Thomistic ontology anyway. I suggested Mackie's *INUS* conditional analysis of causation as a still valuable alternative, and I tried to show that Aquinas's views on causation (i.e., his fourfold distinction of species of causes, and other distinctions he proposed) are consistent with it. I also argued that the resulting account of causation can accommodate Aquinas's claims on immaterial substances considered in chapter two.

A problem concerning the compatibility of Aquinas's views with Mackie's conditional analysis seemed to derive from the fact that according to the former

causes and effects are *substances*, or the hylomorphic components of substances, whereas according to the latter causes and effects are *events*. However, in chapter four, I recalled the fact that Mackie's ontology of events is flawed, and that Kim's implementation of his theory proposes a substance-based account of events which is compatible with Aquinas's claims. I subsequently offered a further implementation of Kim's theory in order to accommodate his ontology of substances within Aquinas's hylomorphism. The resulting proposal holds that each one of the sets of events which are minimally sufficient for an effect must contain, among other events, a *formal INUS* conditional event, a *material INUS* conditional event, an *efficient INUS* conditional event, and – possibly – a *final INUS* conditional event. At the end of the chapter, I tried to explain why all this explains that forms can be causes and effects.

The fifth and final chapter attempted to apply the account of causation suggested in chapters three and four to the cognitive process described by Aquinas, on the grounds of his ontology discussed in chapters one and two. After a brief reconstruction of Aquinas's analysis of cognition, the role of formal causation in sensation, perception and thought was explained and justified. I have also argued that the ensuing view can account for the fact that mind-world identity may be a matter of degree and can explain Aquinas's dictum according to which the intellect can never be claimed to grasp erroneous concepts. Indeed, all thinking involves some degree of mind-world formal identity, although concepts can be grasped with different degrees of accuracy.

I believe that the Thomistic account of formal causation and of its role in mental representation offered in this work satisfies the needs of the proposal put forward by Analytical Thomists. Indeed, it explains why one may talk about formal causation in regard to the relation between world and mind; and it also explains some

claims about thought and reality which were sustained by Aquinas and are appealing within current discussions on epistemology. Someone could object that this work showed that the epistemological merits of the Thomist proposal have too high a metaphysical cost, since they propose a radical revision of orthodox analytical metaphysics. The only reply to this worry may be that the distinctive character of analytical philosophy is its openness to philosophical argument and rational scrutiny. There is no reason to be reluctant to accept conclusions which may be radically different from what one expected, and which require the reconsideration of initially distant traditions of thought, if they follow from sound arguments. The Thomist tradition may be challenged, and may even be ultimately flawed, but – I think this conclusion is *indisputable* – it is worthy of consideration.

Appendix

'Analytical Thomism' and Metaphysical Realism

Doctorial Thesis Presented at the
University of Padua, Italy, December 1999

A Brief Summary

Part One: Realism, Antirealism, and Mental Representation

Chapter One: Metaphysical Realism, Semantic Realism, and Mental Representation

1.1 *The Debate on Realism*

An overview of the debate: definitions and explanations. Metaphysical vs epistemological realism, irrealism, anti-cognitivism.

1.2 *Metaphysical Realism and Epistemological Realism*

Metaphysical realism: weak and strong; epistemological realism: weak and strong; examples from Moore, Smart, Putnam, Papineau, and neo-Kantians; combinatory possibilities of the different views.

1.3 *Metaphysical Realism and Scientific Realism*

Different versions of strong metaphysical realism, and the way they deal with the objects of science; instrumentalism and phenomenalism are compared.

1.4 *Mental Representation: Intentionality and Naturalism*

Different views on intentionality are considered and compared; the views compatible with naturalism are individuated.

1.5 *Realism and Phenomenalism*

The problems of perceptual realism within a naturalistic framework are considered. Phenomenalism (i.e., sense-data theory) could be a solution, were it not that Austin, and, more recently, Valberg offered strong reasons to reject it.

1.6 *Semantic Realism*

The semantic consequence of the conjunction between metaphysical realism and naturalism are considered. The resulting view is semantic realism. It is claimed that the position is instable, since it purports that we should have conceptual abilities which transcend our recognitional capacities.

Chapter Two: Putnam, the Challenge to Realism, and the Problems of Internalism

2.1 *Putnam and his Arguments Against Metaphysical Realism*

It is suggested the reasons of Putnam's interest for the mind-world identity theory lay in the excursus of his thought, since the late Sixties. His frequent changes of mind could be considered like the development of a whole argumentation, which led him to accept direct realism.

2.2 *From Frege to Externalism*

The focus is on the first stage of Putnam's excursus which concerns the issue under discussion. It starts with the abandonment of Frege's idea that thought determines meaning, and ends with the endorsement of realism and of the theory of direct reference. (Late Sixties to early Seventies).

2.3 *The Turn from Metaphysical Realism to Internal Realism*

Second phase of Putnam's excursus: mid Seventies to Eighties. Putnam abandons metaphysical realism under the pressure of the considerations caused by two arguments: the permutation argument and the brains in a vat argument. The resulting position is '*internalism*' or '*internal realism*': a combination of metaphysical antirealism and epistemological realism.

2.4 *Internal Realism, Relativism, and Mental Representations*

Throughout the Eighties Putnam reached the conclusion that a stable notion of reality requires the rejection of the internalism-externalism distinction. It is claimed that the need of experiential constraints on our conceptual freedom emerges also within the internalist framework, opens metaphysical and semantic worries with a Kantian flavour and the Aristotelian notion of form becomes an appealing possibility.

2.5 *From Epistemology and Semantics to the Theory of Knowledge: The Re-emergence of Kant's Problem of Representation*

It is claimed that Putnam's conclusion fits in a novel interest for a Kantian approach to epistemology which has recently become prominent in analytical philosophy (for example, though McDowell). It is suggested that Kantian epistemology opens problems which can be tackled with Thomistic categories. An example taken from Nineteenth-Century neo-Thomism is considered: Fabro's work on cognitive psychology.

Part Two: Analytical Thomism and the Return to Realism

Chapter Three: Analytical Thomism, the Challenge to Naturalism, and Mental Representation

3.1 *Putnam, Neo-Aristotelianism, and the Renounce to Naturalism*

One of the neo-Aristotelian trends which had an influence on Putnam is considered: Nussbaum's works on Aristotle's psychology. In the Sixties, Putnam offered a functionalist reading of Aristotle, but Nussbaum objections to that reading contributed to Putnam discontent with functionalism. Recent

exchanges with Nussbaum led Putnam to defend a fully Aristotelian non-naturalist conception of the mind.

3.2 *Haldane and the Thomistic Theory of Mental Representation*

The second neo-Aristotelian trend which influenced Putnam was Analytical Thomism. Two of Haldane's contentions are critically discussed: his reasons against the naturalisation of intentionality, and his criticism of Putnam's discussion of intentionality. It is also discussed how, according to Haldane, Thomistic cognitive theory could overcome the problems associated with intentionality in contemporary debates.

3.3 *Aquinas on the Abstraction of Sensible and Intelligible Forms*

The focus is on Aquinas's cognitive theory, which is reconstructed. Some crucial points highlighted by critics are discussed: Gaffney, Ryan and Schmidt on the common sense, Fabro on the cogitative power, Kenny and Jenkins on the intellect.

3.4 *Haldane and Mind-World Formal Identity*

Different kinds of representationalism are considered and compared with Haldane's proposal, which is based on hylomorphism (against naturalism) and a theory of the abstraction of intelligible forms from particular individuals (against causal theories of reference and representation). The resulting view is the mind-world identity theory.

Chapter Four: Mental Representation and Realism: a Reply to Putnam by Analytical Thomism

4.1 *Metaphysical Realism and Aquinas's Outlook*

Putnam's reasons against realism are recapitulated and the stand of the Thomistic view in the debate on realism is located.

4.2 *Thomistic Theory of Mental Representation and Strong Metaphysical Realism*

It is claimed that strong epistemological realism grounded on the Thomistic theory of intentionality entails strong metaphysical realism. Quine's arguments against strong metaphysical realism are discussed in connection with a defence of the Thomistic view suggested by Jacobs and Zeis.

4.3 *Why Mental and Linguistic Reference are not Undetermined*

The reasons why the Thomistic theory of intentionality avoids the problems of realism pointed out by Putnam are considered. The exchange between Haldane and Putnam on Thomistic intentionality is discussed. Explanation of Putnam's return to realism. Against Boulter, it is claimed that Putnam's long journey from realism and back was not idle: the value of direct realism and the importance of Aristotelian epistemology emerged from that excursus.

4.4 *Mind-World Formal Identity Theory and Semantic Antirealism*

The position of the Thomistic theory of intentionality about semantic realism is considered. Haldane suggests a sort of weak semantic realism, which is grounded on the idea that the form of the world acts on the mind through a

relation of formal causation. The notion of form allows him to claim that the world is in principle cognisable, although parts and aspects of it may transcend our recognitional capacities. In this way, the merits of semantic realism may be maintained, without its troubles. It is argued that Thomistic weak semantic realism does not face some fatal problems of antirealism highlighted by Künne.

4.5 *Weak Semantic Realism, Kinds of Recognitional Capacities, and the Role of Analogy in Meaning.*

Some objections by Boulter against the compatibility between the negation of semantic realism and the mind-world identity theory are considered. The suggested reply relies on the distinction among different kind of recognitional capacities and on the role of analogy in Aquinas's semantics.

Part Three: An Open Problem for Analytical Thomism: The Representation of Sensible Qualities

Chapter Five: Aquinas on the Reception of Sensible Forms

5.1 *Sensation and Materialism*

Some theoretical and exegetical problems of Aquinas's theory of abstraction are highlighted. The need for Analytical Thomists to tackle them is underlined. The issue of materialism and sensation in Aquinas is particularly pressing, since it touches upon one of the central themes of naturalism, i.e., the view that Thomists attempts to challenge.

5.2 *The Debate on Aquinas and the Reception of Sensible Forms*

The ontological status of sensible forms in Aquinas has been at the centre of a philosophical and exegetical debate since the early Nineteen-Eighties. Going through the main views, two fundamental questions emerge: is Aquinas notion of *intentional existence* sufficient to explain cognitivity? Is the immaterial reception of forms mentioned by Aquinas an event occurring in the body or in the soul?

5.3 *Pasnau and Semimaterialism*

Semimaterialism, Pasnau's recent characterisation of Aquinas's view, is reconstructed: it holds that the immaterial reception of forms is a completely physical event occurring in the body and that, as a result, cognitivity is a capacity possessed also by non-intelligent animals, and even by beings lacking awareness.

5.4 *Materiality and the Cognitive Role of Sensation in Aquinas*

A criticism of Pasnau's semimaterialism is suggested. It requires some detailed analysis of Aquinas's notions of matter and form. The conclusion is that although according to Aquinas sensation occurs in the body, it purports an event of the whole human soul, which is not a material thing. It is contented that Aquinas's claims are incompatible with contemporary physicalism, but they are not incoherent or implausible for that reason.

5.5 *The Nature of Sensible Forms: Mere Representations or Real Objects of Knowledge?*

The issue of sensible forms raises a problem also about the nature of forms existing in reality: according to Aquinas, are they real properties of things, or are they the powers which give rise to sensations? An exegesis due to Kenny is discussed and some ambiguities are disentangled through the Thomistic distinction between first and second actualities. The conclusion is that sensible forms (colours, odours, and so on) are real properties of things.

Chapter Six: The Simple View of Colour and the Reference of Perceptual Terms

6.1 *The Debate on Secondary Qualities*

The conclusion of the previous chapter opens the problem of the distinction between primary and secondary qualities, and suggests that Aquinas did not hold that distinction. Is that a plausible view? Some contemporary attempts to answer that question are expounded.

6.2 *Mackie and MacDowell on Secondary Qualities*

Mackie took from Locke the idea that the distinction between primary and secondary qualities holds, and he explained it in the terms of subjectivity and objectivity of phenomenal properties. McDowell objected to Mackie's distinction between subjectivity and objectivity, but maintained the distinction between primary and secondary qualities: the former, unlike the latter, cannot be thought of other than like contents of some subjective state.

6.3 *Campbell: A Criticism Against the Primary-Secondary Qualities Distinction*

Campbell has rejected McDowell distinction: all thinkable things can only be thought of as contents of subjective states, since even spatial location assumed by physics is only specifiable through the reference to a subject. Consequently, he rejects the primary-secondary qualities distinction and accepts the simple view of colour: colours, and other traditional secondary qualities, are real properties of things. Smith advanced several criticisms against this view.

6.4 *The Simple View of Colour: a Defence*

Some replies to Smith's objections are proposed. The replies rely on a non-physicist account of causation according to which it makes sense to claim that colours, odours and so on have causal powers.

6.5 *The Simple View of Colour and Semantic Externalism*

Jim Edwards argued that the simple view of colour seems to presuppose semantic externalism, but is incoherent with it. In order to show the incoherence, he gives a counterexample in which contradictory consequences are derived from the conjunction of semantic externalism and the simple view.

6.6 *Semantic Externalism and Internalism about Warrant*

A slightly modified version of Edwards's counterexample is applied to primary qualities and it has the same unpleasant consequences which it had in

the case of colour. I consequently note that the incoherence can be given a different diagnosis: the problem arises when we take the external semantic value of terms to warrant assertions embedding those terms. If we distinguish externalism of semantic value and internalism of warrant, the problem can be avoided and the simple view is vindicated.

Conclusion

Analytical Thomism may be a significant contender in contemporary epistemology. Of course, it needs to face a number of challenges, but this is true of any philosophical proposal. The third part has shown that some of the challenges can be met: others can be probably confronted in similar manners. The most urgent task for Thomists seems to be that of offering a satisfying elucidation of the notions of formal causation and its metaphysical presuppositions: that notion, indeed, plays a key role in the cognitive process which grounds the Thomist proposal, but it is difficult to accept or even to understand in contemporary terms.

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CSE *Scriptum super sententiis magistri Petri Lombardi*, tomes 1 and 2 edited by P. Mandonnet and tomes 3 and 4 edited by M. F. Moos, Paris: Lethielleux, 1929-1956.

^{*} In the text, references to Aquinas's works are given as follows. Commentaries on Aristotle's works (*CDA*, *ME*, *PE*, *SCM*): book (in Roman numbers), lecture, paragraph. *CSE*: book (in Roman numbers), distinction, question, article. *CT*: book (in Roman numbers), chapter. *DSC*: article, part of

- CT* *Compendium theologiae*, in *Opera omnia iussu Leonis XIII P. M.*, t. 42, Rome: Editori di San Tommaso, 1979, pp. 5-191.
- DME* *De mixtione elementorum ad Magistrum Philippum de Castrocaeli*, in *Opera omnia iussu Leonis XIII P. M.*, t. 43, Rome: Editori di San Tommaso, 1976, pp. 131-157; English translation in Aquinas, *Selected Philosophical Writings*, edited by Timothy McDermott, Oxford: Oxford University Press, 1993, 117-21.
- DSC* *De spiritualibus creaturis*, edited by L. W. Keeler, Rome: Pontificia Universitas Gregoriana, 1937; English translation by March C. Fitzpatrick and John J. Wellmuth, Milwaukee, 1949.
- DUI* *De unitate intellectus contra Averroistas*, in *Opera omnia iussu Leonis XIII P. M.*, t. 43, Rome: Editori di San Tommaso, 1976, 243-314.
- EE* *De ente et essentia*, in *Opera omnia iussu Leonis XIII P. M. edita*, t. 43: *De ente et essentia*, Rome: Editori di San Tommaso, 1976, p. 315-381.
- ME* *In XII libros metaphysicorum expositio*, edited by M. R. Cathala and R. M. Spiazzi, Turin-Rome: Marietti, 1971; English translation by John P. Rowan, *Commentary on Aristotle's Metaphysics*, Notre Dame (Indiana): Dumb Ox Books, 1961, 1995.
- PE* *In VIII libros physicorum expositio*, in *Opera omnia iussu Leonis XIII P. M.*, t. 2, Rome: Ex Typographia Polyglotta S.C. de Propaganda Fide, 1884; English translation by Richard J. Blackwell, Richard J. Spath, and W. Edmund Thirlkel, *Commentary on Aristotle's Physics*, Notre Dame (Indiana), Dumb Ox Books, 2001.

- QDA* *Questio disputata de anima*, in *Opera omnia iussu Leonis XIII P. M.*, t. 24, Rome and Paris: Commissio Leonina - Editions Du Cerf, 1996.
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- SCG* *Summa contra Gentiles*, edited by P. Marc, C. Pera and P. Caramello, Turin and Rome: Marietti, 1961. English translation in four volumes by C. Pegis, F. Anderson, V.J. Bourke, C.J. O'Neil, Notre Dame: Notre Dame University Press, 1997.
- SCM* *Sententia de coelo et mundo*, in *Opera omnia iussu Leonis XIII P. M.*, t. 3, Rome: Ex Typographia Polyglotta S.C. de Propaganda Fide, 1886, 1-257.
- ST* *Summa Theologiae*, in *Opera omnia iussu Leonis XIII P. M.*, tomes 4-12, Rome: Rome: Ex Typographia Polyglotta S.C. de Propaganda Fide, 1889-1906; English translation by the Fathers of the English Dominican Province, 1920.

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